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TRANSACTIONS OF THE

SECTION ON

Preventive Medicine and Public Health

of the
American Medical Association
at the Seventy-First Annual
Session, held at New Orleans,
La., April 26 to 30, 1920

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LIST OF OFFICERS

Those named below have served as officers in this section. This branch of the practice of medicine has been included with other subjects in the earlier years, as will be seen by the headings which denote the different names given to the section. The names of the officers have been taken from the published records, which are deficient in some cases. It will be appreciated if any additional data are brought to the attention of the Secretary of the American Medical Association.

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PROCEEDINGS OF THE SECTION

WEDNESDAY, APRIL 28—MORNING

The meeting was called to order at 9:35 by the chairman, Dr. James A. Hayne, Columbia, S. C.

Dr. James A. Hayne, Columbia, S. C., read the chairman's address, entitled "The Rights of the Child."

Dr. Erwin A. Peterson, Washington, D. C., read a paper on "What the American Red Cross Can Contribute to the General Health Program." Discussed by Drs. J. W. Schereschewsky, Washington, D. C.; Philip King Brown, San Francisco; John D. McLean, Harrisburg, Pa.; John P. Davin, New York; C. W. Goddard, Austin, Texas; E. Luther Stevens, St. Augustine, Fla., and Erwin A. Peterson, Washington, D. C.

Dr. Frederick L. Hoffman, Newark, N. J., read a paper on "Mortality and Incidence of Leprosy Throughout the World." Discussed by Drs. Isadore Dyer, New Orleans; J. W. Schereschewsky, Washington, D. C.; G. C. Chandler, Shreveport, La.; John P. Davin, New York; Hiram Byrd, University, Miss.; S. W. Welch, Montgomery, Ala.; A. T. McCormack, Louisville, Ky.; V. G. Heiser, New York, and Frederick L. Hoffman, Newark, N. J.

Dr. A. T. McCormack, Louisville, Ky., read the following resolution and moved that it be accepted and presented to the House of Delegates:

WHEREAS, Leprosy is a national menace; therefore, be it

Resolved, That the House of Delegates be requested to ask that the American Public Health Association shall call a national conference to discuss every phase of the problem to the end that the public may be educated to the insidious spread of the disease, the possibility of cure or arrestation in the earliest stage of the disease, and the necessity of segregation.

Motion carried. (See minutes of the House of Delegates.)

Dr. Carroll Fox, Washington, D. C., read a paper on "Minimum Standards of Organization for Municipal Health Departments." Discussed by Drs. G. C. Chandler, Shreveport, La.; Walter H. Brown, Washington, D. C.; A. T. McCormack, Louisville, Ky., and Carroll Fox, Washington, D. C.

Dr. J. A. Watkins, Cincinnati, read a paper on "The Training of Industrial Physicians." Discussed by Drs. J. W. Schereschewsky, Washington, D. C., and Edward Martin, Philadelphia.

The chairman appointed Drs. A. T. McCormack, Louisville, Ky., and John W. Kerr, New York, on the Executive Com-

mittee to take the places of Drs. Otto P. Geier, Cincinnati, and W. S. Rankin, Raleigh, N. C.

THURSDAY, APRIL 29—MORNING

Dr. Charles M. Abbott, Alexandria, La., read a paper on "The Carrier Question in Epidemic Meningitis and Diphtheria." Discussed by Drs. L. I. Lobenhoffer, Alexandria, La.; H. J. Nichols, Washington, D. C.; G. W. McCoy, Washington, D. C.; C. A. Earle, Des Plaines, Ill.; A. Parker Hitchins, Indianapolis, and Charles M. Abbott, Alexandria, La.

Dr. Luther A. Riser, Columbia, S. C., read a paper on "Typhoid Reduction in South Carolina: Results in Counties with Health Organization." Discussed by Drs. W. S. Leathers, University, Miss.; J. D. McLean, Harrisburg, Pa.; G. C. Chandler, Shreveport, La.; John A. Ferrell, New York, and Luther A. Riser, Columbia, S. C.

Dr. J. W. Schereschewsky, Washington, D. C., read the following resolution and moved that it be accepted and presented to the House of Delegates:

WHEREAS, The National Tuberculosis Association, through investigations of its Committee on Indigent Migratory Consumptives, covering the last fifteen months, has found:

That there is a large migration of indigent consumptives to the Southwest in search of health;

That out of 1,786 patients, largely indigent or potentially indigent, reported from the Southwest in the last six months, 783, or 41.3 per cent., had been definitely advised to go there by physicians;

That this migration of indigent and potentially indigent consumptives is ill advised in that it causes much needless suffering and loss of life brought on by inadequate care, worry, homesickness and lack of proper food, which are conditions too frequently experienced after arrival; and furthermore,

That the migration of this group is a menace to the public health, both during migration and after arrival, and is a financial drain and social burden to the communities to which the migration goes. Therefore be it

Resolved, That in order to check this unnecessary and undesirable migration, physicians throughout the country be not only requested but urged *not* to advise their tuberculosis patients to migrate to the health resort states, unless such patients have sufficient funds to properly provide for their necessary care and comforts for at least one year.

Dr. Alexander Lambert, New York, presented the following amendment to the foregoing resolution, which amendment was accepted by Dr. J. W. Schereschewsky, Washington, D. C.:

Resolved, That the Section on Preventive Medicine and Public Health hereby requests the House of Delegates to instruct the Council on Health and Public Instruction to investigate and report at the next annual meeting the migration of consumptives from one state to the other throughout the Union, and the number of indigents so foisted on one state by another, and report definite suggestions to prevent this constant undesirable migration.

The resolution, as amended, was duly seconded and carried. (See minutes of the House of Delegates.)

Dr. Lewis A. Conner, New York, read a paper on "Heart Disease as a Public Health Problem." Discussed by Drs. Alexander Lambert, New York; G. C. McKinney, Lake Charles, La.; William H. Mercier, Pittsburgh; John P. Davin, New York; B. A. Ledbetter, New Orleans, and Lewis A. Conner, New York.

Dr. Lunsford D. Fricks, Memphis, Tenn., read a paper on "Eradication of Malaria: A National Health Problem." Discussed by Drs. Graham E. Hensen, Jacksonville, Fla.; A. E. Chace, Texarkana, Ark.; C. C. Bass, New Orleans; W. S. Leathers, University, Miss.; J. W. Schereschewsky, Washington, D. C.; John A. Ferrell, New York; John P. Davin, New York, and Lunsford D. Fricks, Memphis, Tenn.

Dr. John McMullen, Louisville, Ky., read a paper on "Trachoma: A Public Health Problem of the States." Discussed by Dr. Arthur T. McCormack, Louisville, Ky.

Dr. J. Wilkerson Jervey, Greenville, S. C., read a paper on "The Differential Diagnosis of Conjunctival Folliculosis and Trachoma." These two papers were discussed by Drs. Henry Dickson Bruns, New Orleans; Theodore E. Oertel, Augusta, Ga.; James A. Hayne, Columbia, S. C.; Walter H. Brown, Washington, D. C.; S. W. Welch, Montgomery, Ala.; G. Golseth, Jamestown, N. D.; J. G. South, Frankfort, Ky.; John F. Hogan, Baltimore; Hiram Woods, Baltimore; John McMullen, Louisville, Ky., and J. Wilkerson Jervey, Greenville, S. C.

The chairman appointed the following nominating committee: Drs. C. St. Clair Drake, Springfield, Ill.; C. C. Bass, New Orleans, and A. T. McCormack, Louisville, Ky.

Friday, April 30—Morning

The following officers were elected for the ensuing year: chairman, John D. McLean, Harrisburg, Pa.; vice chairman, C. D. Selby, Toledo, Ohio; secretary (three years), W. S. Leathers, University, Miss., and delegate, James A. Hayne, Columbia, S. C.

Dr. W. A. Sawyer, Rochester, N. Y., read a paper on "Industrial Epidemiology." Discussed by Drs. A. E. Chace, Texarkana, Ark.; John P. Davin, New York; James R. Bean, Birmingham, Ala.; S. W. Welch, Montgomery, Ala., and W. A. Sawyer, Rochester, N. Y.

Dr. A. E. Chace, Texarkana, Ark., read the following resolution and moved that it be accepted and presented to the House of Delegates:

Resolved, That the Section on Preventive Medicine and Public Health condemns the contract entered into by the United States Railroad Administration with railroad employees, whereby physical exami-

nation of applicants for employment is prohibited, and that it recommends to the House of Delegates the adoption of some resolution condemning in terms that cannot be mistaken the entering into of a contract with any labor organization prohibiting physical examination.

(Not transmitted to the House of Delegates.)

Dr. E. Luther Stevens, St. Augustine, Fla., presented the following amendment to the foregoing resolution, and moved its adoption:

Resolved, That a committee be appointed to investigate the question raised in the above resolution and report the result of its investigations at the first session of the Section on Preventive Medicine and Public Health at the next annual meeting of the American Medical Association.

The amendment was accepted by Dr. A. E. Chace, Texarkana, Ark., and carried.

Dr. Norman Walker of Edinburgh, Scotland, and Sir Humphry D. Rolleston of the Royal College of Physicians of London, England, who were in attendance at the annual meeting of the American Medical Association, were extended the privileges of the floor of this section.

Dr. Lloyd Noland, Birmingham, Ala., read a paper on "The Work of the Department of Health of the Tennessee Coal, Iron and Railroad Company." Discussed by Drs. S. W. Welch, Montgomery, Ala.; Walter C. Jones, Birmingham, Ala., and Oscar Dowling, New Orleans.

Dr. Grover C. McKinney, Lake Charles, La., read a paper on "The Difficulties of Public Health Administration." Discussed by Drs. G. C. Chandler, Shreveport, La.; James A. Hayne, Columbia, S. C.; H. F. White, Washington, D. C.; T. J. Howells, Salt Lake City; Milton Board, Louisville, Ky.; Mayer A. Newhauser, New Orleans; W. S. Leathers, University, Miss.; W. D. Calvin, Fort Wayne, Ind.; S. W. Welch, Montgomery, Ala.; John P. Davin, New York; Oscar Dowling New Orleans, La., and Grover C. McKinney, Lake Charles, La.

Dr. Florence L. Meredith, New York, read the following resolution and moved it be accepted and presented to the House of Delegates:

WHEREAS, The number of graduates from medical schools in 1919 is reported to be nearly 900 short of the minimum estimated by the Carnegie Foundation as being necessary to carry on adequately the medical work of the country; and

WHEREAS, The growth of public health work calls for an increased number of doctors; and

WHEREAS, Women doctors have proved successful in preventive medicine and public health work; be it

Resolved, That the Section on Preventive Medicine and Public Healtht endorse efforts to enroll women as students in medical schools, and especially recommend to their attention the field of preventive medicine and public health.

After discussion by Drs. Milton Board, Louisville, Ky.; C. C. Bass, New Orleans; W. S. Leathers, University, Miss.,

and Florence L. Meredith, New York, the motion was carried.

(Not transmitted to the House of Delegates.)

Dr. William Elder, New Orleans, read a paper on "The Necessity for the Reporting of Venereal Disease by Physicians." Discussed by Drs. Oscar Dowling, New Orleans; A. E. Chace, Texarkana, Ark.; W. D. Calvin, Fort Wayne, Ind.; Milton Board, Louisville, Ky.; Hardie R. Hays, North Carrollton, Miss.; H. F. White, Washington, D. C., and William Elder, New Orleans.

THE RIGHTS OF THE CHILD*

JAMES A. HAYNE, M.D.
COLUMBIA, S. C.

Fellows of the American Medical Association:

You have conferred a great and undeserved honor on me by electing me chairman of the Section on Preventive Medicine, and I wish to assure you that I am both grateful and appreciative of the honor done me, the more so because this section of our Association is to my mind one of the most important, if not the most important section.

The triumphs of internal medicine and surgery in the last half century have been marvelous, and suffering humanity has been greatly benefited. Many obscure cases of disease have been patiently studied out, and the proper remedies applied. By new methods of diagnosis and the use of instruments of precision, a secure foundation has been laid, and medicine is no longer guesswork and empiricism: it has become a definite science. Cause and effect have been studied, and rational procedures discovered to assist nature in restoring pathologic conditions to normal.

Specialism is now the order of the day. Almost every day sees a new variety of specialist born. If the specialist has built his knowledge of a specialty on the secure foundation of an intimate knowledge of the human body in sickness and in health, and has not been led astray by the ignis fatuus of belief that all human ills may be cured by remedying the conditions found to exist in the particular organ or organs that he has chosen for his attention, but regards the human body as a wonderful mechanism with every organ depend-

* Chairman's address.

ing on the proper functioning of all organs, then the practice of a specialty is of the greatest benefit to humanity, for it is admitted to be impossible for one brain to know all the minutiae necessary for the treatment of each individual organ that may not be properly functioning.

Preventive medicine should rank as a specialty, and the health officer or preventive disease specialist should be recognized as authority on his chosen branch, and he should confine himself as do other specialists to the things pertaining to the prevention of diseases. To be a preventive disease specialist, however, he should have had all the training in diagnosis and treatment of disease that makes a first class general practitioner. Having acquired this knowledge, and in addition studied and mastered the problems of public health, he may then offer his services to the public as a specialist in matters pertaining to preventive medicine. Having perfected this specialty, he should no longer practice curative medicine.

The opportunities now offered in this branch of the profession for trained men are many and lucrative, and we must impress on the profession as well as on the public that because a man has the degree of M.D. he is not necessarily a health officer. The public is recognizing these facts, and if the physician is to retain his position as a leader in the fight to prevent disease, he must accept the public verdict and recognize the preventive disease specialist, just as he does the ophthalmologist, the aurist, the pediatrician, the urologist, and the specialist in diseases of the stomach or any of the other specialists.

Unfortunately, little time is now given in the medical schools to the teaching of preventive medicine. The student is trained in the diagnosis and treatment of diseases looking toward a cure, and his mind is directed solely toward curing the ills to which flesh is heir, having but little idea about how these diseases

could be prevented. The awakening to these facts is shown in many medical centers, and doctors of public health will soon be not as rare as they are at the present time.

PREVENTION OF GREATEST NUMBER OF DEATHS

Our vital statistics reveal that more than 33⅓ per cent. of all our deaths are of children under 5 years of age. It is in this branch of preventive medicine that the greatest progress can be made.

Death will overtake all of us sooner or later, but we should be able to keep from his cold grasp the infant and tender child. The spectacle of Rachel weeping for her children, and refusing to be comforted because they are not, would not be so often seen if we would make a proper study of what I have termed the rights of the child, and attend to securing these rights for all children.

This subject is timely because the world is just emerging from the gloom of the death struggle for human rights, and the nations are taking stock of their assets. War, pestilence and famine have ravaged the nations of the world. Money has lost its value; ancient thrones have crumbled and fallen; statesmen and philosophers of all nations have turned their eyes to the child as the savior of the world. One supreme fact is acknowledged by all—that their greatest asset is the child. Thinkers the world over are giving their attention to the problem of increasing the number of children, and making the world safe for them.

If we read aright the lesson of the war to this country through the findings of the draft boards, it must be impressed on us that we have wasted our birthright, have ignored some of the fundamental rights of the child; and as a consequence, when our government was called on for its man power, it did not have the man power which its population indicated.

The rights of man have gradually emerged from slavery to freedom. Runnymede, the 15th of June,

1215, when King John signed Magna Carta; the eloquence of Rousseau, Voltaire, the fiery baptism of the French Revolution, and our own Declaration of Independence have given to man the inalienable rights to life, liberty and the pursuit of happiness. Now, no one disputes that rank is but the guinea stamp—"A man's a man for a' that." "Honor and fame from no condition rise. Act well your part, there all the honor lies."

The rights of woman, too, have been slowly achieved, from the time of Mary Wollstonecraft of England, who first wrote the foundation of the rights of woman, down through Susan B. Anthony, Emeline Pankhurst and the militant suffragettes of England who burned the English country homes, heckled the prime minister, to the women who picketed our own President in Washington, and by general waving of the yellow flag at last achieved their aims. The ballot is now in the hands of the women, and with it they have gained all their rights, both real and imaginary.

But, what of the child? Who has championed its rights? Summoned against its will and without its consent into this world of trouble, pain, sickness and finally death, what Rousseau or Voltaire shall sound the tocsin and call on the infant "mewling and puking in the nurse's arms," to demand that its own mother shall give it the lactic fluid that is its primal right. Bid it howl like all the heads of Cerberus against being condemned to partake of milk of cerulean hue contaminated by Bulgarian bacillus prescribed by some adolescent and ardent disciple of Esculapius. What Danton or Robespierre shall band together the sans-culotte toddlers so that they may not be torn from the kindly face of mother earth, washed and dressed and sent to kindergarten, where all of their play is so scientifically arranged by followers of Pestalozzi and Froebel that good fairies are unknown to them, and, to paraphrase Wordsworth, a primrose beside a mossy

bank is to them but a primrose, nothing more; where they are taught like the clown in Mrs. Browning's poem to pick simples, turning a broad back to the glory of the stars. Who shall demand for them the right to believe in fairies, the right to sunshine and to flowers, to the fresh air, and to green fields, to all that makes up the paradise of childhood. Who will lead another Children's Crusade for these, their ancient rights?

BIRTHRIGHT OF THE CHILD

The rights of the child named in the order of their sequence, and order of importance, may perhaps be thus arranged:

1. The right to be conceived. Strange as it may seem, this right has been more successfully denied to the child than perhaps any other of its rights. Malthus wrote and taught that in order for a country to be prosperous, the number of babies must be in ratio to the amount of food produced. This, of course, implied birth regulation. Napoleon, on the other hand, when asked by Madame de Staël who was the greatest living woman of France, replied, to her chagrin, "Madame, she who has borne the most sons for France." Here we have the opposite poles of thought. In this country we have not lacked apostles for both creeds. Our own Roosevelt's slogan was more babies and better babies, and he fought the then growing tendency of the American family under modern conditions to consist of a human parasite, called a wife, and an idolized poodle dog. To the transcendentalist who believes that all souls are drawn from the Over Soul, and enter the material body but to perfect themselves by the trials and tribulations of this world and, after blind effort to reach the light, finally return to the Over Soul perfected by these struggles for higher things, the denial of the right to be conceived and born is to deny the whole scheme of the universe, is a sin against nature, and therefore unpardonable.

2. The right to be born after conception. Few will be found to advocate openly the converse of this proposition. But our birth registry, and the enormous number of miscarriages and abortions which occur will show that, in practice, many, far too many, deny the child this right. We medical men must be ever on the watch to prevent and expose these violations of the law of God and man.

3. The right that its parents shall be healthy, both mentally and physically, in order that the child shall not enter the race of life handicapped by transmitted disease or mental weakness.

The problem of eugenics, as first advocated by Galton in 1884, has had many followers. In 1904, Galton endowed a chair in the University of London for the purpose of the study of agencies under social control that may improve or impair racial qualities of future generations either physically or mentally. Galton's work has been elaborated, and laws have been passed in many states to endeavor to safeguard the child in this right.

By law in many states certificates of physical fitness for marriage have been required of both contracting parties. While we concede that this is a step in the right direction, much study is yet necessary before we pass arbitrary laws; for a physically perfect man and woman may never produce a Shakespeare, a Raphael or a Beethoven, and some of the greatest additions to human knowledge and happiness have come from those whose earthly shell was misshapen, for the body must always be regarded as the stringed instrument on which the soul plays wondrous chords, and this would be a dreary world, indeed, without poetry, music and art.

One of the best examples of the way in which eugenics has been carried out was recently given by the English nobility, in whom for centuries has been inculcated the idea that an English gentleman is the finest

work of God. The answer came at Mons, where the flower of the English nobility laid down their lives gallantly fighting, with their faces to the foe, for the rights of democracy.

4. The right that its mother shall be so cared for by the state that neither through poverty nor ignorance shall she bring it into the world in unhygienic surroundings, nor under superintendence of those who are not properly trained to give the most skilful treatment to the mother in this, her time of supreme helplessness and agony. This means that maternity hospitals must be maintained in the city, and that in the rural districts trained medical men and skilled nurses must be easily available.

5. The right to have its own mother's milk until it is old enough to be weaned. This we regard, perhaps, as the most important right, and the one most frequently denied. In the rich it is denied because some complaisant boudoir physician agrees with the mother who desires to be rid of the burden of nursing—that her milk does not suit the child, that she does not give sufficient quantity, that it will injure her figure, that it is best for the child not to nurse, and that it disfigures the tender mouth of the child and makes it misshapen. All of these arguments you and I have heard. In the poor it is denied because grinding poverty prevents the mother from giving the time necessary for nursing her little ones. The state should provide that no mother should have to labor so hard that she is unable to nurse her baby. Pensions for mothers are given in England before and after the birth of the child, and there is no expenditure of money a state can make that will pay better dividends than the care of the mother and babe. Old Jacobi, that Nestor of medical men, said after years of experience that a woman who could have a baby could in 90 per cent. of the cases nurse it. But nature takes her revenge. In the rich she makes the mother strive by seeking new pleasures

every day and excitement of all varieties, to forget the pressure on her breast of little hands, and the dewy mouth of the babe which she has robbed of its birthright. In the poor, the mother, instead of having an infant every two years, has one every year; for normal conception does not take place before the child is weaned, and the poor do not understand all the arts of preventing conception known to the rich.

6. The right, guaranteed by the state, that every baby born shall have an equal chance with other babies to develop into the normal, healthy child. This is the problem of the health officer: that the child shall not have to suffer from the ill effects of communicable diseases; that measles, whooping cough and diphtheria shall no longer be called children's diseases; that the tender babe shall be cared for by all the power of the state, as it lives its happy life and grows in wisdom and stature. This also includes medical inspection and correction of defects.

7. The right that, when it reaches school age, it shall have the best that the resources of any government can command. It should have properly ventilated schools, carefully lighted and heated, with the most approved methods of sanitation; and if a proper diet cannot be provided in the homes of the poor, such diet should be provided in the schoolroom, so that its budding mind may be trained that it may attain to industrious, sober and healthy citizenship and take its place in the ranks of producers, and be a real asset to the government that has cared for it. This is the remedy for bolshevism. These methods will stamp out the unrest of the world; and if the rights I have tried to indicate are given the child, the future of the race is assured.

THE PROGRAM OF THE AMERICAN RED CROSS

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I want you to forget, if possible, all of the definitions which you have already heard with reference to the Red Cross program.

One cannot think of any organization entering on any kind of program unless it very carefully examines itself to see whether it is the kind of organization which should proceed with that program. Therefore, let us bring our thoughts together (I know you have thought about it, and I want to think with you) and get the data before us, before we consider the final points. The first question is this:

What kind of an organization is the American Red Cross?

Again will you please forget the definitions of the American Red Cross which you have heard.

COMPOSITION OF THE AMERICAN RED CROSS

First, the American Red Cross is an organization of about 25,000,000 folks—members. Now don't think that we are unaware that numbers of folks have become members of the American Red Cross by being buttonholed in hotels or on street corners and having a dollar extracted from them. But a large number of folks are members of the American Red Cross because they choose to be. It is, then, an organization of some 25,000,000 members grouped into chapters, auxiliaries and branches, scattered all over the United States and the possessions of the United States.

Second, it is an organization of which 10,000,000 members have had definite practice in service for

other folks. Now, there is a good deal of difference between having an ideal of service and having actually spent your time and muscle in service. The American Red Cross is an organization which has probably 10,000,000 members who have taken some time away from their daily tasks and have given that time to the service of other people. They are attuned, if you will, to service on behalf of the other folks.

The American Red Cross is composed of members whose service has had a romantic background. There is considerable importance attached to the fact that a service is backed by romance, and the service that has been given by the millions of members of the American Red Cross has been backed with such romance as to add a greater significance to the emblem of the American Red Cross.

The American Red Cross is composed of members whose service has brought to them certain rewards. It is true in child training that the thing which a child does the next time is the thing that brought joy the "last time." In this respect, most of us are just grown up children—the things we tend to do tomorrow are the things which brought us satisfaction yesterday. Thus, service which was rendered on behalf of humanity, service to other folks which has brought the approbation not only of our countrymen but of the world, tends to be repeated or continued tomorrow. We have experienced satisfaction as a result of having served; therefore we are inclined again to undertake service in the same way, in the same field tomorrow. This inclination is a tremendous power which we must take into account when we consider the American Red Cross as a force. The service given by American Red Cross workers is a service rendered under a definite banner, a banner which has stood for service for a long time, a banner which has been added to by all of these services so that when one sees the American Red Cross today one

sees much more than just two crossed red stripes. There has been woven into that banner so much of romance, so much of feeling of satisfaction, that there is a tendency, not a great tendency, mind you, nor is there a tendency on the part of all people, but there is a tendency on the part of many of those who have served under or supported that banner to continue—to "carry on"—under its leadership. They had carried out that idea. It makes no difference that there are other forces in the field which might expand to do things which the Red Cross is proposing to do. The Red Cross is ready now. When a better fitted or more logically chosen organization is ready to accept and carry on the responsibilities of any work begun by the Red Cross, an adjustment will be desirable and can be made.

Meantime, here we have a big national organization composed of workers, and people ready to support those workers. Here we have a nation awake as never before to its social needs—and large among these are health needs. Shall we discard this organization because the emergency which necessitated its rapid development and expansion has ceased to exist? Shall we begin again at the bottom (or at the near-bottom of coordinating other people's beginnings), to build up a similarly great force, with a similarly great backing? Can the directors of the American Red Cross say to you social health workers: "We will junk this whole thing and let it die, because we don't need such a standing army for emergency work; but we know there is much peace time work for such a social force as the American Red Cross"?

Should we not rather say: "Here is a great social force born for service. Here is a great opportunity for national service. How can this organization help to meet the country's needs? Where can the American Red Cross Service spirit best serve the American nation? What piece of work in the general peace

program of reconstruction and new construction is the Red Cross best fitted to undertake?"

RECORD OF THE ORGANIZATION

It seems to me that the second point that we must discuss with reference to a program is the record of an organization. Therefore we ask: "What is the record of the American Red Cross in the field of health?" because we are talking about a health program.

I want to go over very rapidly some of the things that would indicate the record of the American Red Cross. What are the achievements? What is the thing to which we are attuned? What is the thing to which the American Red Cross member looks when he wants to tell somebody else what "my association" has done? Those things form the background on which we must build a sane program for the future. For instance, the American Red Cross has placed in communities some 500 Red Cross nurses. It has done in health education, for instance, a thing which is tremendous: just for 1918 there were about 50,000 women graduated from the course in home care for the sick—home nursing. About 16,900 in that one year were graduated from the class in dietetics. There were 25,000 graduated from the first aid courses. Now these are just bare figures indicating those women who were certificated from these classes and do not at all include the thousands of persons who were trained to do special pieces of work during great epidemics and disasters.

In the past the American Red Cross has done two things in the health field:

1. It has cooperated with our national health agencies, with our legally constituted local health authorities, with the United States Public Health Service, in doing different kinds of things in the health field; it has cooperated with these agencies in supporting financially, morally and with volunteer

service movements which these agencies were promoting; picturing to its chapters the movement which another national organization was putting forward, in such a way that the chapters took it up and added their influence and their energy and their work to the whole movement.

2. It has always done health work in disasters; it has done all kinds of work during the war; it fought typhus in Serbia; it fought tuberculosis in Italy; it fought infant mortality in France; it fought malnutrition in Belgium, and so you could go on. All over war-stricken Europe, the American Red Cross did health things, so there is behind the American Red Cross a tradition of doing health things. It is, then, an organization of millions of persons attuned to service which has brought to them great satisfaction, and which in turn elicits enthusiasm, and it has a record of successful achievements in the field of health here and abroad.

THE NURSE AND THE HEALTH CENTER

Now, with those two things in mind, that is, (1) the kind of organization it is, and (2) its record in the health field, the American Red Cross sat down to determine what specific things it should do in this country in the field of health. I think is was wise for the American Red Cross to sit down and determine what the specific thing was that it should do. I am glad it didn't jump into it all at once. In considering national organizations from the standpoint, now, not of the physician or health worker, but from the standpoint of sociologist or psychologist, there are some very important considerations which have to be brought into this discussion.

First, no national organization (I am speaking now rather dogmatically, and there might be exceptions to this) has ever grown up on a basis of a broadly diversified program, that is to say, without pretty sharply defined aims, and objects capable of concrete

expression. A national organization which depends on lay membership for support must profess aims, propose activities, and produce results, which folks, not you and I, but I mean lay-folks, can see.

We believe that there must be definite projects which are to be held before those members for those members to see. As definite a thing, for instance, as a Red Cross nurse in the field of health, projects that they can see and projects that answer the question: "What does your chapter do?" If the Red Cross member thus accosted can reply "Oh, we hire a Red Cross nurse," well, that answers the question.

Now, then, in the field of health the American Red Cross will set out to establish certain things. One of those things is the Red Cross nurse, and another of those things is health education, which folks don't see so very well. But a definite and powerful factor in health education which folks can see, which is coming now to mean something in the subconsciousness of all of us, is the health center, doing two things, harnessing the interest in health, which is dominant, and harnessing an interest in centering our efforts on some declared objective.

The health center, then, is the one other activity which the American Red Cross wishes to idealize before its chapters so that when you or anybody else may say to a chapter, "What does your chapter do?" the chapter may answer, "We have a health center," and the question is answered.

I want, in closing, to give this idea of what is forming in my mind as to the health center proposed by the American Red Cross.

In the first stage, a health center has to do purely with striving for an education for people along health lines of telling them "how." It must develop methods of enticing people inside its center and putting them in touch with the literature that is available all over the United States, adding the personal touch to the literature. This first type may be undertaken by any

chapter. I am thinking in terms of my little town of about 300 population. The next step adds a diagnostic clinic, next the operating clinic, and probably later adds hospital facilities for the whole county, becoming a unit taking care of the health and sickness of all dwellers in that county.

This is the program of the American Red Cross.

ABSTRACT OF DISCUSSION

Dr. J. W. Schereschewsky, Washington, D. C.: I listened very attentively to the exposition of the program of the American Red Cross, and I did not hear Dr. Peterson say one word concerning in what way these activities are to be correlated with the activities of the properly constituted health authorities of the country. We all agree that in an emergency all kinds of volunteer agencies and organizations are required to help in order that we may attain our goal quickly and decisively, but the problem of conserving the health of the people of the United States, of building a health structure on broad and firm foundations, is one that cannot be solved in a few months or a few years. It means steady work carried on from day to day, from week to week, from month to month, from year to year—even from decade to decade and from century to century. This means that there must be a permanent, properly maintained organization. It also involves the exercise of police powers on the part of states and communities, and the carrying out of health laws which can only be executed by the proper official agencies of the country. Therefore, it would follow that the program of the American Red Cross can only have two ends in view: either that the American Red Cross ought to become the official health organization of the country, or that the American Red Cross should be an auxiliary aid organization to the properly constituted health authorities of the country. That ought to be the program of the American Red Cross, and then when that has been achieved, they should retire from the field. If the program of the American Red Cross is to receive the support of all health officers, the American Red Cross must make some definite statement concerning its plans as to the way in which its efforts are to be correlated with those of the health officers, what purpose it has in mind to achieve, and what goal it will endeavor to attain.

Dr. Philip King Brown, San Francisco: I would like to know what it is proposed to do with the 2,000 additional nurses the Red Cross desires, and how much supervision over the nursing program and public health the national headquarters of the American Red Cross will assume, and how much the local chapters will assume. What is the present relationship that exists between the National Public

Health Nurses' Association and the nurses of the American Red Cross? All over this country people are asking what the program of the American Red Cross is to be, and how the Red Cross proposes to correlate its efforts with those of the already existing organizations. No one can know the wonderful work that the National Association for Public Health Nursing has done and not want to assist them in every way possible to enlarge in their field. And when you ask for 2,000 more nurses, it is natural that we should want to know what you expect to do with those nurses, when we take into account the tremendous shortage that exists in the nursing field of the country today.

Dr. John D. McLean, Philadelphia: In Pennsylvania there has already been established a very direct cooperation between the American Red Cross and the state department of health. We have health centers in a number of places. The local Red Cross agencies have cooperated with us in all things. A number of times the words "health officer" have been used. We in Pennsylvania do not like that term, "officer." We do not want to be "officers," and we do not want to carry to the public what unfortunately that word has carried too often in the past, the idea and suggestion of police powers. That is not, as we see it, our status. Only in the very last extremity do we want to exercise in the full those powers which we have. It is only in an extremity that we wish to use "police powers." The Red Cross nurses are working with us.

Dr. John P. Davin, New York: I am merely a private practitioner. Most of you are engaged in public health work. I was very glad to hear Dr. Peterson say that the private practitioner is a health asset in the community as well as the constituted health authorities. The tendency has been, I think, to drift away from the work and the influence of the private physician to that of the state or the public health officer. Regarding the treatment of those people who are earning only $5 a week it was said that such persons were unable to go to the private practitioner because they could not pay, and that, therefore, it was the duty of various health organizations to take care of them. I say that you should leave them where they have been in the past, to the average general medical practitioner. The spirit of the average physician is to treat the man who comes to him, no matter what his wages may be. Dr. McLean has spoken about the power of the health officer. Under the laws of the state of New York the health officer, whether right or wrong, is supreme. In New York state a measure was introduced into the legislature providing that the testimony of a health officer in court could not be controverted, but would have to be accepted as a matter of record. I am glad to say that this measure failed to pass and become law. The arbitrary powers of the health departments are tremendous. Dr. McLean is right in his

attitude concerning the word "officer." One of the most unfortunate things connected with that service is the fact that they are termed "officers"; that they are considered, in a way, as being policemen, and that, therefore, it follows that many people have that terrible fear of health officers which is very unfortunate. This should not be. We should think of the health officers rather as helpers and advisers than as policemen. In his speech of yesterday I heard the governor of Louisiana say that politics would not in any way enter into his program for the welfare of the lunatics, feebleminded, and all those suffering from mental troubles in the state of Louisiana. This is the position taken by Governor Smith of New York on this question. The spirit of preventive medicine is to be helpful rather than to sit in stern judgment. Finally the object of all medical service is teaching, is helpfulness; telling people how to keep from getting sick, how to remain well.

Dr. C. W. Goddard, Austin, Texas: The title "health officer" should be associated with the individual. The use of the title can be held back and not emphasized. But if you take from the individual the name "health officer," the laity will misinterpret this action, and it will be said, especially in the rural districts, that the title has been taken from the health officer in general, and that will have a bad effect. It will lessen in the minds of the laity, the authority of the health officer, and will limit his field of usefulness. I believe the better plan, under all conditions, is not to emphasize that title of authority given to health officers. With reference to the cooperation of the American Red Cross with the various state and local boards of health in Texas we have very satisfactory cooperative activities. When we established the bureau of child hygiene we obtained the services of a woman who had been district director for the American Red Cross Nursing Department, and she retained this directorship for the state of Texas. In this way we have a splendidly correlated work. The nurses are nominated by this director of the bureau, and we are placing them just as rapidly as we can. We have in the past three months placed about thirty public health nurses in counties, and could today place more if they were available. When these nurses are placed on duty they are given by the executive officer of the state board of health an appointment as sanitary inspector of the state board. This is done quietly, without being emphasized to the people generally. We issue to the nurses what we term standing orders, a set of rules which outline the sphere of activity of each of these nurses. This set of rules is submitted to the local medical society for approval. The nurse acts under the rules so agreed on. Her relations to the medical profession are thereby outlined, and she knows what her sphere of activity is, and is governed accordingly. We find this method a most agreeable one. The nurses are furnished with blanks on

which to make their reports of conditions of interest pertaining to public health. If the nurse finds conditions in her community that are necessary to report to the state board of health, she makes her report in triplicate, sends a copy to the state board of health, one copy to the local officer and retains the third copy for herself. This report is then taken up through the local health officer. We are getting splendid results by that method of procedure in our section.

Dr. E. Luther Stevens, St. Augustine, Fla.: How can we take to our communities the basic ideas presented by the chairman, and the program presented by Dr. Peterson in his paper? How can we reach three distinct classes: The business men, to get their support; the educators, those who are immediately connected with the school program, to get their cooperation; and the various organizations that are interested in welfare movements? What is the cooperative plan in connection with the charity organization idea? And what is the relation of this movement to the rapidly growing organization among the churches, the interchurch movement, which now seems to have so much of the attention of the people? The practical things which the American Red Cross organizations do, and which we have all had experience with, and have seen personally, are things that should be done in active cooperation, in thorough cooperation with all existing organizations. Does the program alluded to provide for such cooperation?

Dr. Ervin A. Peterson, Washington, D. C.: The health service department of the American Red Cross has very definitely this ideal, that eventually the legally constituted health authority will be the only health agency in a community. I do not know how soon the American Red Cross and other private health agencies are going to work themselves out of jobs. I am convinced, however, that when our democracy becomes a real democracy, that the health officer, or the legally constituted health authority, will be able to handle all the health problems of our country and of the different states and communities, but until that time I think he will not. The health service department of the American Red Cross is definitely convinced that there surround the health officer certain very great weaknesses which are not inherent in the officer himself, but have to do with social and political conditions. There is a definite feeling on the part of many people that the health officer is a "cop," and that it is as justifiable to "beat" the cop there as it is to "beat" him on his beat. It seems to me that that has been one of the underlying reasons why great national organizations such as the National Tuberculosis Association, the Cancer League, the Child Hygiene Association, the new Heart Disease Association, have arisen. And those organizations have gotten tremendous support. Why? People are interested in something tangible. You can see tuberculosis; you can see infant mor-

tality. You can see venereal disease. On the other hand, public health is big; folks cannot grasp it. Therefore, it is difficult to work up interest in it. Many folks like to do things that officials do not do. We like to assume the prerogatives of officials. Until the time comes when the health officer is accepted by all as the leader in the health field, there will be a place for such organizations as those I have mentioned, and there will be much work for them to do. There are many examples all over the country of health officers who have gotten far beyond and ahead of the position of being merely cops, and have taken the lead in health movements, and are not only handling the situation from the standpoint of the law, acting as an officer of the law, but are doing a tremendous work in health education. That is the job of the public health officer of today. The American Red Cross will endeavor in every way possible to help the health officer by means of nurses and health centers. The American Red Cross is simply calling attention of the people to the need of wider knowledge of and wider activity in the field of public health, and when that is done you will have less trouble in getting money for work in public health.

There is a great demand for public health nurses. The Red Cross could place 2,000 on the pay rolls of its different chapters if nurses were available. The Red Cross is proceeding in its nursing work with the idea that public health nursing is the function of health departments and as rapidly as such departments are ready to take over nurses hired by Red Cross chapters they are being turned over. The Red Cross nursing department is cooperating with state health departments in employing supervising nurses who direct the work of the Red Cross nurses as well as those hired by the states. The Red Cross is now giving its attention to ways and means of getting a larger number of women to enter training.

Our studies have proved to us that there are large numbers of people in every community who do not go to the general practitioner, either through poverty or ignorance, or because of fear of the charge which will be made. Therefore, there is a considerable number of people in every community who ought to be taken care of. And the answer is the clinic. In organizing for the health center each chapter is advised and urged to secure as an advisory council representatives of all the operating agencies in the field of health. The health officer, a representative of the board of education, the medical profession, the dental profession and of all health associations, national, state and local, operating in the community. The health center will do just what each of these agencies is very anxious to do, namely, educate the community in health and each agency ought to have many ideas to suggest. We therefore hope to see on the advisory council, which will be something different from a paper council, the health officer of each community in which a health center is started.

IS LEPROSY INCREASING?

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On the basis of the best possible information, it may be conservatively estimated that there are not less than 250 known cases, and probably from 400 to 500 known and suspected cases of leprosy throughout the continental United States at the present time.

This estimate is more conservative than earlier assumptions, but the available evidence would seem to justify the conclusion that the disease is very slowly increasing in this country and that new foci of leprosy are being formed and as such constitute a serious menace to the public health interests of the nation at large.

Under date of Feb. 3, 1917, or more than three years ago, Congress enacted a bill providing the sum of $250,000 for a federal leprosarium, chiefly for the care of interstate and international lepers. It is regrettable that there should have been so much delay in establishing a model federal institution, but the outlook seems fairly hopeful that the site selected at Cedar Keys, Florida, will meet with public approval. Whether it is the best site that could have been selected is open to question.[1]

1. According to a report published under date of July 4, 1920, "The U. S. Public Health Service has found a suitable place for a national leprosarium at Carville, La." This means that the federal government will take over the Louisiana institution, with about 100 inmates. The location at Carville is far from ideal, being inland on a bend of the Mississippi River immediately back of the levee. The wisdom of this choice may therefore be questioned, for, aside from other reasons, it is generally agreed that leper settlements are best located on islands which preclude the ever-present risk of escapes or wrongful contact with persons outside. There is a further and practically more serious objection in that the institution as now existing will place a heavy liability upon the government for the care of 100 patients at present provided for by the state of Louisiana. But some solution is better than no solution at all, and at least some provision will in the future be made and without further delay for isolated cases of leprosy at present ill provided for by local authorities or not at all.

It was recommended that the government use the Ship Island quarantine station, which has been abandoned for other purposes, and could have been utilized at very small expense practically for the immediate accommodation of isolated cases of leprosy throughout the South. The question is pertinent why such a site, in most respects admirable for the purpose, should go to waste when the situation is most urgent and, in fact, in some cases a desperate one.

The first leper home in this country was established by the state of Louisiana in 1894 near Carville, on the Yazoo and Mississippi Valley Railway, near a point in Iberville Parish, La., known as Bruns, about 60 miles from New Orleans. That institution has about 100 inmates and is under the medical supervision of Dr. Ralph Hopkins of New Orleans, and a board of which Dr. Isadore Dyer was a member.

At the Louisiana institution about 80 per cent. of the lepers cared for are white, whereas the white population of the state is only 57 per cent. Whether this would justify the conclusion that leprosy is relatively more common among the white than among the colored population is somewhat doubtful, for negro cases are probably more effectively secreted than white cases.

The average age on admission was 32 years for white males and 40 years for colored males. For females the average age on admission was 37 years for white patients and 38 years for colored patients. It would therefore seem fairly safe to conclude that the average age on admission is somewhat higher for colored lepers than for white lepers.

Of the total number of cases under consideration at the Louisiana Home, about 30 per cent. are of the tubercular variety, 24 per cent. of the anesthetic variety, and 37 per cent. of the anesthetic and tubercular varieties combined.

The age period of greatest frequency on admission was 20-29 years.

The average length of treatment previous to death is from about eight to ten years. The duration varies

with different types of the disease, being longest in anesthetic cases and shortest in tubercular cases.

For most of the elements of the leprosy problem the data are only gradually becoming available. In the report of the Senate Committee on Public Health and National Quarantine is included a large amount of international information. Unfortunately, our information regarding leprosy in the states in which the disease is fairly common is far from complete. According to the most trustworthy recent returns the number of known cases of leprosy in Louisiana is eighty-seven; in California, thirty-nine; in Massachusetts, thirteen; in Minnesota, ten; in New York City, twenty-eight; in the state of Pennsylvania, six; in Texas, thirty-three; while isolated cases are known to occur in probably ten to fifteen more states at the present time.[2]

In the registration area, which now includes about 80 per cent. of the total population of the United States, there have occurred during the last ten years 120 deaths from leprosy. The recorded mortality rate has increased from 0.13 per million in 1900 to 0.29 in 1918. If the death rate of 1918 is taken as 0.3 per million, the number of probable cases in the continental United States may be conservatively placed at 400. This does not represent the cases officially noted during the lifetime of the leper, or effectively segregated, or subject to government supervision and control, but rather the assumed number of cases which give rise to the mortality indicated on the basis of the probable known death rate of lepers under segregation, placed as high as 80 per thousand per annum.

It was the evidence presented to the Senate Committee on Public Health and National Quarantine which resulted in the passage of a bill providing for a federal leprosarium. One institution will meet an emergency, but will only in part aid in the solution of

2. A recent investigation at Galveston has disclosed a considerable number of cases heretofore totally unsuspected. It is the opinion of qualified observers that the probable number of cases of leprosy in Texas is not less than 100. Additional evidence of the increase of leprosy is found in a third case reported within a few months by the public health authorities in charge of the medical inspection of immigrants at Ellis Island, New York.

the problem. Three institutions are certainly required, and possibly four; there should be one on the Gulf Coast, one on the Pacific, one on the Atlantic, and one in the Central West. The institutions now maintained by the state of Massachusetts at Penikese Island, Buzzard's Bay, by the state of Louisiana, by the city of San Francisco at the Isolation Hospital, and by certain other communities in connection with public institutions, meet only the most urgent needs of a situation not far from desperate. It is to be hoped that the Public Health Service will more actively concern itself in the future with the provision of the act of Congress, which, though not mandatory, is certainly equivalent to a request that all unnecessary delay should be avoided.

There is leprosy to the north of us, in New Brunswick and British Columbia; there is leprosy to the south of us in the West Indies and Central America, the Panama Canal Zone, and throughout a large portion of South America; there is leprosy to the east of us in European countries such as Greece, Bulgaria, Syria, Scandinavia, northeast Germany, Russia, Turkey, etc., and there is leprosy on an immense scale to the west of us in Hawaii, the Philippines, Japan, and throughout the farther East. Only a grossly indifferent public opinion can account for our national apathy toward a question which has been a subject for discussion in the medical press and otherwise for more than fifty years. There are perhaps 100 cases in the Panama Canal Zone, there are more than 600 cases in Hawaii, there are more than 5,000 cases in the Philippines, and throughout the world possibly more than 3,000,000 cases, a potential menace at least to every other country indifferent to its interest and the fact that leprosy in the United States occurs often in isolated instances, one and all of which can be traced to some locality where leprosy is known to exist.

It may therefore be suggested that this question should receive more adequate consideration in the future and that pressure should be brought to bear on

the public health authorities, the federal government, and the several states to deal more effectively and humanely with leprosy cases now known to occur.[3] It may further be suggested that the time is opportune for another leprosy conference in continuation of the international meetings held in Berlin in 1897 and in Bergen, Norway, in 1909, and of the corresponding national conference held in the Argentine Republic in 1906. Such a conference would bring together the best thought of the present period in behalf of the solution of a problem which is an indictment of our civilization and of our indifference to the human interests and the welfare of the most afflicted portion of mankind.

ABSTRACT OF DISCUSSION

Dr. J. W. Schereschewsky, Washington, D. C.: I am very glad that Dr. Dyer considers leprosy a curable disease. I disagree, however, with Dr. Hoffman's statement that it is necessary in a national leprosarium to provide accommodation for only from twenty to thirty patients. It is necessary to provide for a much larger number than that. I think the estimate of 500 lepers in the United States is a conservative one. There are certainly more than 500 lepers in the United States at the present time. Furthermore, because of the development of the methods of cure, the outlook for the future is that we will probably be able to cure a considerable majority of these leprosy patients in the incipient stage. If we can bring about improvement in methods of treatment and establish methods of cure, it is obvious that the national leprosarium ought to be able to care for lepers from all over

3. The strongest objections lie against sensational accounts of leprosy cases in the public press. Under date of April 25, 1920, the Washington *Times* published a lengthy account of an alleged conspiracy of lepers throughout the country to march in a body to Washington as a protest against the failure of the government to provide the urgently required federal institution. The Tacoma *Leader*, in a dispatch dated April 25, gave utterance to the warning that "Every effort is being made by the government to forestall the movement." There was no truth whatever in these dispatches, which in their inception apparently had the approval of a publicity department of the government. The same objection lies against sensational reports of alleged leprosy cures and new medical discoveries, certain to be misused to encourage false hopes on the part of the most afflicted element of the community. To give publicity to such statements as that "Chicago Physician May Have Leprosy Cure," or "Leprosy Cure Discovered in Cod Liver Oil," or "New Leprosy Cure Brought Back from India by Physician Who Had Charge of Leprosy Colony," or "Leprosy Cure Reported by Brazil Scientist," etc., can only do incalculable harm; but it may at the same time be asserted without fear of contradiction that leprosy is being cured at the Louisiana Home to the extent of one third of the early cases admitted to the institution, and that the treatment followed, as originally perfeced by Dr. Isadore Dyer, is today the best method known to science to bring about an arrest of early cases and certainly relief, and possibly a cure.

the United States, because it would be uneconomical for any one state to take care of its own lepers, two or three cases. A national leprosarium will take care of the leper situation in the best possible manner, because many who otherwise would not declare themselves, would come forward if the prospect of cure was held out to them. The problem of finding a site for a national leprosarium, however, is not so simple as Dr. Hoffman has stated. The board has had the matter under consideration for a long time, and my understanding is that they have not been able to agree formally on what was a suitable site for the establishment of a leprosarium. The Public Health Service has been perfectly willing to go ahead and establish this leprosarium as soon as they got a report from the board as to a suitable place.

Dr. G. C. Chandler, Shreveport, La.: As long as leprosy is so slow in its development, and so few cases occur at any one time, there is no way to handle this disease except through the United States government. If you don't take care of these patients before they spread over the country, it is too late. This is strictly a national question, and this national organization should go to Congress and insist on proper care being taken of these people. As long as it is left to the states to do this, as long as it is left to the cities to do this, you are simply wasting time, wasting effort and wasting money, and not getting proper results.

Dr. Hiram Byrd, University, Miss.: In 1910 a boy about 10 years old turned up in Jacksonville, Fla., with leprosy. He was placed in the isolation hospital, but as he was there alone, he ran away. He was gone about a month, when he came back. He was again placed in the isolation hospital, and after a time he ran away again. He was gone for six months before he came back. When he came back he said that he had been going around with the "races" to different race tracks all over the country. Later he again ran away, and this time he was away four weeks. He was finally picked up in one of the southern counties in Florida. Three years later I was to see a man who had an eruptive disease. I found that it was a case of leprosy. This man had never been near any place where there was a leper or a leper center, so that it was absolutely impossible that he could have contracted the disease anywhere but at home. I was at a loss to know how he could have gotten it, until I found that on his last four weeks trip, the boy I referred to had been a guest in that family. That is the story of what is happening in every single isolated leper case in all the country.

Dr. S. W. Welch, Montgomery, Ala.: Two months ago there occurred a case in Alabama that we thought was leprosy. I tried to conceal the fact that we suspected it to be a case of leprosy, because the poor fellow had been ill for about ten years, and there was no evidence that any one had

contracted the disease from him. I saw no good reason why the community should be stampeded by an announcement that there was a case of leprosy in that community until we knew what we could do with this man. He was imprudent enough to go home and tell his family that the health department was afraid that he had leprosy. He was isolated in a dark room, and even his family avoided him. I succeeded finally in having him examined by an expert, who pronounced it not a case of leprosy, and the man was released from confinement. I do not see how the state of Alabama could have cared for this man had the diagnosis of leprosy been confirmed. And it is tragic to imagine what the life of the poor fellow would have been had that diagnosis been confirmed. The states ought not to be expected to take care of one case of an infectious disease, when it would cost just as much to take care of that one case as it would one hundred cases. Individual states could pass laws appropriating money for the purpose of maintaining its lepers at a national institution. But to have an institution of our own in the state of Alabama for one case, when we probably would not need to have that institution after that one case had been cured, or had died, would prove a needless burden.

Dr. V. G. Heiser, New York: I have been associated with lepers for many years, and have had to do with a great many cases of leprosy. While in the Philippine Islands I was connected with isolating about 10,000 cases. Since that time a better day has dawned for the lepers. Fifteen or twenty years ago the whole question of the treatment of leprosy was on a very discouraging basis. The poor unfortunates had nothing to look forward to but a life of solitude, isolation, separation from their fellows, and not even a faint hope of cure. When the treatment which Dr. Dyer initiated in this country came out, namely the use of crude chaulmoogra oil, I had the pleasure of receiving stimulus and inspiration from the knowledge of the cases that had been cured here by Dr. Dyer and by Dr. Hopkins. We introduced the treatment in the Philippine Islands, and we effected a number of cures there. Later we were fortunately able to improve the treatment, as we thought at any rate, and cured a larger number than we had been able to cure by using Dr. Dyer's method. Later on the treatment was still further improved by Rogers of India, and he reports a number of cures. More recently favorable progress has been reported from Hawaii, by the use of esters of chaulmoogra oil. So the future is much brighter for the leper. With regard to the number of lepers in this country I am more inclined to agree with Dr. Dyer on that question. I think Dr. Hoffman has been almost overconservative. We come across lepers in many states that are not on the official roll, and therefore do not find their way into the statistics. Furthermore, we know that in many instances lepers do not die of leprosy: they succumb to inter-

current disease, under which head the death is recorded. Consequently, a great many people who have leprosy, or who die of leprosy, are never recorded as such. The statistician, who draws deductions from the reported number of cases or from the recorded deaths, will probably arrive at a smaller number than is actually the case in this country. Referring to Dr. Hoffman's statement concerning the establishment of a national leprosarium at Ship Island, it should be recognized that the U. S. Public Health Service is confronted with a most difficult problem. As Dr. Hoffman was a member of the committee and worked hard to overcome the difficulties, I think we must ascribe his remarks to impatience with himself for failure to obtain results rather than as a criticism of governmental agencies. As I understand it he went over this country for two years trying to find a place where the poor, unfortunate leper might lay his head. It is said that in one place the citizens formed themselves into a vigilance committee, to resist the establishment of a leprosarium in their midst. So the problem is not as simple as it seems.

One of the things the medical profession is accused of doing is to rush into things sentimentally, not looking at things in a business way. Ship Island is too small. It is largely under water at high tide and always threatened with being washed away with a gulf storm. Its capacity is scarcely sufficient to provide for the number of lepers that are ready to go. As the various states are sure to avail themselves more and more of federal facilities, it would mean that in a short time the proposed colony would have to be transferred or another colony established. Either procedure involves the unnecessary expenditure of public funds. There is every reason to believe that a larger site that would be suitable will soon be available. It seems to me, therefore, that it would be better to wait a little longer and start right. If the lepers of this country could be assembled, it would be possible to do so much more for them than by dealing with isolated cases locally. And by holding out prospects that at least a certain percentage of them can be cured, as we can honestly promise today, we will undoubtedly induce more at present to enter a leprosarium than by legal compulsion.

Dr. Frederick L. Hoffman, Newark, N. J.: One point in this discussion is of first importance, and that is the suggestion that all the lepers of this country be brought together in a single federal leprosarium. As far as I understand the constitutional limitations of the federal Public Health Service this would be quite out of the question, for the federal government could not compel a state leper to surrender his right of domicile to become an inmate of a leprosarium in another state. The only exceptions would be lepers apprehended in interstate travel, which is prohibited by statute. In other words, the government would have to rely entirely on its ability to persuade isolated lepers to seek an asylum in a

federal institution, which would attract patients in proportion to its known advantages and known results. Concerning the view that leprosy is practically noncontagious in northern latitudes: Effective segregation is as urgently needed for New York as for Louisiana. As I recall it, of the twenty-seven known cases in New York City only about ten are segregated on Blackwell's Island. New York certainly needs a proper institution equivalent to the one maintained by the state of Massachusetts on Penikese Island. There is every reason for apprehending an increase in leprosy at the port of New York because of the want of a well considered policy in dealing with this class of cases. Massachusetts, unfortunately, apparently has no suitable locality for a leper colony, although Penikese Island is in many respects well adapted to the purpose. The main objections are the climatic conditions during the winter, and the scarcity of water and shade trees during the summer. It is, however, something very considerably to the credit of the state of Massachusetts that the settlement should have been located in the heart of the summer resort region of Buzzard's Bay, as an illustration of the faith of the authorities that there is no danger to the surrounding communities, as, of course, is well known in the light of abundant evidence in this and other countries.

I have come to the conclusion that a single institution for the whole United States would be ill-advised. There are naturally reasonable objections to transporting lepers across the continent, far away from their native homes and surroundings, to a locality possibly widely at variance with conditions to which the lepers had become accustomed. Equally opposed to common sense is the suggestion that all the lepers in this country be transported to Molokai. In my judgment there should be not less than three federal institutions, located respectively on the Atlantic, the Gulf and the Pacific coasts. Possibly, there should be another institution, in the central West, midway between Chicago and St. Louis. But it is most urgent that a start should be made and that the proposed leprosarium should be located at a suitable point without further and unreasonable delay. The suggestion which I have made concerning Ship Island, if carried into effect, would easily meet the needs of from fifty to 100 lepers, and, as far as I am able to ascertain, the living conditions would be near to ideal; at least, this would be true for the major portion of the year, as has clearly been shown by long experience when the island was a quarantine station of the United States Public Health Service.

The interstate aspects of leprosy are well illustrated by the present Biloxi case of a leper who was apprehended while engaged in oyster chucking preparatory to the sale of such oysters in interstate traffic. This man had gone to New Orleans for treatment, and having crossed the state line had become subject to federal control, although thus far in the

course of nearly three years' standing nothing has been done to provide this man with suitable special care.

I omitted to direct attention to the urgency of a national, and possibly an international, conference on leprosy, at which the whole subject could be discussed from new standpoints. Although in its larger aspects an international problem, leprosy is primarily a local problem, and an American problem, if you please, and more so in view of the extensive frequency of the disease in our insular possessions. I hope that some one will be good enough to move a resolution that it is the sense of this meeting that such a conference be held under the auspices of the government, and that, if possible, it be made international in character, so that all the essential facts and phases of the problem may be brought to light.

The discussion has been most gratifying to me as evidence of an aroused interest in the subject, which, unfortunately, has not, during recent years, attracted the required amount of public attention. The gentleman from Alabama, where there is a case of suspected leprosy, and in connection with which he pointed out that the benefit of the doubt had been given to the patient, is wrong, for the innocent public is first of all entitled to more adequate consideration. The first duty of the health officer is to protect the community, and not the suspected person, in the case of dreadful maladies, which, if allowed to spread, must cause immense suffering to all concerned.

Leprosy is such a dreadful affliction that whoever has seen even a single case must needs be impressed with his duty as a citizen and a Christian to leave nothing undone to help the poor unfortunate victims toward at least an alleviation, if not a cure, of the disease. The gratifying results at the Louisiana Leper Home, however, justify the anticipation that, in an increasing number of cases, the disease can be arrested if taken care of in its initial stages, as is now happily the case to an increasing extent. My own investigations include about twenty leper homes throughout the Western Hemisphere, and I have observed more than 3,000 cases, under all conditions, from the admirable institution at Palo Seco, in the Panama Canal Zone, to the world famed colony at Molokai. My investigations have forced on me the conviction that it is our duty to work toward an aroused public interest in this matter and that nothing could be further from the truth, or more contrary to the facts, than the statement by the late surgeon-general, Dr. Blue, that, "Though leprosy is a disease to be treated with care it is not to be looked on as a national menace." I firmly believe that it is a menace if allowed to increase and spread, and that even at the present time the practical certainty that there are more than 500 cases in this country suggests our failure to give due consideration to the duty of effective segregation and possible prevention and control.

MINIMUM STANDARDS OF ORGANIZATION FOR MUNICIPAL HEALTH DEPARTMENTS

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Preventive medicine is not an exact science. Epidemiology has yet to teach us many things with regard to the occurrence, prevalence and spread of many of our commonest diseases, to combat which we are compelled to use methods based on mere hypothesis. For instance, comparatively little is known of the epidemiology of those communicable diseases which are supposed to be spread through discharges from the mouth and nose, such as measles, scarlet fever, influenza, smallpox, chickenpox and mumps. Modern thought teaches us that they are personal contact diseases, i. e., diseases spread directly from person to person through ordinary every day social and business intercourse. If this is true, obviously it is a condition difficult or impossible to remedy.

On the other hand, epidemiology has taught us much relative to the control of those diseases spread through discharges from the intestine and those disseminated by insects. Here, again, as in the so-called diseases of the "respiratory type," the patient or carrier is primarily at fault, yet it is possible by proper attention to the environment to control them successfully. Malaria cannot spread in the absence of *Anopheles* mosquitoes. Typhoid fever can be controlled by proper disposal of human excreta, purification of water supplies, etc. In these diseases it is perfectly feasible for health authorities to erect artificial barriers which will reduce the dangers of personal contact to a negligible quantity.

With all preventable diseases, no matter what may be their cause, it is necessary for health officials to keep in personal touch with the people. The mere exercise of police powers will not control disease. The people need advice and education. The masses are at least one generation behind the modern health officer, so far as their knowledge of preventive medicine is concerned, and the health officer himself is even farther away from a complete knowledge of the subject. He therefore must be an investigator always striving after new truths.

The days of the part-time, unskilled health officer and the old-time sanitary inspector are numbered. It is now realized that health officials must be thoroughly familiar with their work both in theory and in practice. With increasing knowledge among the people, popular opinion is delegating more and more authority to the health department and increasing its duties many fold. In order that these duties may be performed satisfactorily and that good results may accrue, the employment of full-time, trained men is imperative.

The purpose of a health department is conservation of health and prolongation of life. It may therefore be considered as a department of preventive medicine.

Its functions and duties are essentially the same in practically all cities regardless of their size. Differences in the amount of work to be performed are absolute and not relative, and this alone should determine the size of a health department. A small city may have an efficient health department, and yet its organization may be very simple. Complexity of organization increases with the size of the community, although the principles underlying public health work remain the same. As a city increases in size, details of administration make it necessary to depend more and more on subordinate officials; but every activity of the large health department should have its counterpart in the smaller organization, although in the latter, one official may be performing the duties which in a

larger department would be distributed among many in several different divisions.

The preventable diseases may be classed as those due to: (1) animal and vegetable parasites; (2) conditions in the environment; (3) occupational influences: (4) faulty diet; (5) faulty habits, and (6) heredity.

One or many of these causes may act throughout or at different periods of man's life which, for purposes of the health officer, may be divided into seven periods: (1) the period previous to conception; (2) the intrauterine period; (3) the period of birth; (4) the preschool period; (5) the school period; (6) the productive and reproductive period, and (7) the period of old age.

These two classifications suggest the various functions and duties of a health department. The items in the group are intimately correlated, and no health department can be considered complete unless cognizance is taken of all. Whether or not there is an actual subdivision of the department according to duties performed, the work naturally falls under these eight headings: executive and administrative; vital statistics; communicable diseases; child hygiene; food inspection; sanitation; industrial hygiene, and last but not least, education.

The smallest health department which nevertheless contains all of the elements essential to public health work may be regarded as consisting of one physician with the qualifications of a health officer, one public health nurse and one clerk, all full-time employees. A larger department may be considered as a development from this nucleus resulting in a multiplication of personnel, specialization along certain lines, and logical distribution among bureaus calculated to cooperate with one another without unnecessary reduplication of effort or waste of time and money.

Thus, the full-time health officer who was performing the duties of epidemiologist, educator, dispensary

physician, bacteriologist and inspector in a very small community would be relieved of many duties by the addition of epidemiologists, bacteriologists, inspectors, and others, in the process of developing a larger department. With economic conditions as they are today, it is not possible to state positively the amount required to defray the expenses of a health department; but it is suggested that the appropriation necessary to maintain a minimum health organization varies from 50 cents to $1 per capita per annum. It is thought that in a city of 10,000 population, 75 cents per capita would be sufficient to maintain the minimum organization consisting of the nucleus mentioned above (Table 1).

TABLE 1.—EXPENSE OF MINIMUM ORGANIZATION

One health officer	$3,000
One public health nurse	1,200
One clerk	1,000
Salaries	$5,200
Maintenance	$2,300
Total	$7,500

All full time.

Maintenance includes office and laboratory expenses, printing, expenses of an inexpensive automobile, etc. The health officer must perform the duties of bacteriologist, epidemiologist, school, milk and food inspector, etc.

In a city of 25,000 population, 75 cents would hardly cover the expense, as a city of that size should have a small isolation hospital (Table 2).

TABLE 2.—EXPENSES IN A CITY OF TWENTY-FIVE THOUSAND

One health officer	$3,500
One epidemiologist	2,500
Three public health nurses at $1,200	3,600
One milk inspector	1,500
One sanitary inspector	1,200
One statistical clerk	1,200
One stenographer	1,000
Salaries	$14,500
Maintenance	$4,250
Total	$18,750

All full time.

In this organization the epidemiologist performs the duties of a bacteriologist, and he divides the duties of school inspector and dispensary physician with the health officer.

It will be noted that no provision is made for the collection of garbage and other city wastes, street cleaning, etc. These activities can well be omitted in considering a health department, as they quite properly belong to a separate department of the city government.

ABSTRACT OF DISCUSSION

Dr. G. C. Chandler, Shreveport, La.: The protection of the public against preventable disease depends on the cooperation of the people, and the way to get that cooperation in a democratic country is to educate them simply on essentials. Do not harrass them by any unnecessary interference with their customary life. The sheet anchor of protection against diseases entering through the respiratory tract is ventilation. Educate the people to build sleeping porches, and to sleep in the open air, or with their windows wide open, winter and summer, and you will have solved to a great extent the question of prevention of diseases, such as smallpox, measles and similar diseases. Tell them about the accumulation of disease germs in closed rooms, and they will throw the windows open, thus reduce morbidity. If you want to protect the public from diarrhea or dysentery or typhoid fever, the best way to afford this protection is to see that the source of the water supply is the safest that can be obtained, and then use in addition to that the artificial method of destroying germs that get into the milk. That is the way to afford protection against diseases of the digestive tract which may enter through milk. You can give protection against diseases caused by inoculation, as by mosquitoes, by draining ponds, and where it is not possible to drain off the water, if it is stagnant, cover the surface with oil. And screen the houses!

Dr. Walter H. Brown, Washington, D. C.: Dr. Fox has made probably the best study of municipal organizations in this country, and those of us who have watched the growth of this movement have had a great deal for which to be thankful to him. I do not think that there is any doubt as to what should be done. One of the large problems that is facing us is to get trained officials. In order to get the type of young men that we need it is necessary that they be given sufficient salaries, proper status, and a secure tenure of office. In Kentucky they are proposing to carry out a certain program, and they need men to do the work which they are proposing to do. When I left a municipal position not more than four weeks ago the state from which I came wanted

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four trained health officers, full-time men, with salaries ranging from $2,500 to $6,000 a year. If we look over the field in search of men, we are struck with the lack of available material. There is a great shortage of trained men. We can go into the public health schools all over the country, and we find hopelessly small groups of the type of men we need being fitted for this kind of work. If we are not careful, we will develop a one-sided program. We should have in mind that there is a great necessity to do something to attract to public health work people who are able and fitted to carry out the type of administration that Dr. Fox has so admirably presented to us.

Dr. A. T. McCormack, Louisville, Ky.: Every member of the profession who loves this work will be grateful to Dr. Fox for presenting in concrete form a definite minimum for the organization of a city health department. The responsibility is up to us, the medical profession to attract to this field, and then train, the personnel that is absolutely essential if we are going to accomplish anything in this work. The most serious matter that confronts those of us who are administering health departments is to secure that trained personnel that can do the work when we have the appropriation with which to carry on a definite program of work. Our difficulty does not consist in going before legislatures and budget commissions and the people themselves to convince them of the necessity for health work, but our difficulty is to secure trained personnel to carry on the work. The state board of health of Kentucky recently accepted an invitation from the University of Louisville to remove its organization and offices to Louisville, and attempt to develop a practical school of public health, where health nurses and health officers will receive training. We are not going to try to develop scientific teachers of public health, or to develop experts who will know one of the great lines of activity in which we are all interested, but we are going to develop the man who can do what Dr. Fox requires to be done, and what has to be done, for the people will become dissatisfied with less.

The faculty of our school will be composed practically entirely of health officials, people who have been actively confronted with the problems they are attempting to teach these young men and women how to solve. Half of the period of training will be devoted to laboratory work, in the human laboratory furnished by the men, women and children in the jurisdiction of the health department of the city of Louisville, the county of Jefferson, and adjacent territory where we are organizing health departments to carry on the work with these pupils under the supervision of trained field men. We have had forty-two students in our school during its first year. We expect to have twice that many at the opening of the school in the fall. No pupil will be admitted who is not

approved for admission by the health department of the state from which he comes. No one will be admitted who is not a graduated physician. On the public health nursing side, no nurse will be admitted who is not a registered nurse in the state from which she comes, and who is not approved by the health department of that state. Our object is to train actual health officers.

Dr. Carroll Fox, Washington, D. C.: My opinion is that all the health officers in the United States, by combining their efforts and concentrating them, can have little or no effect in the control of many of the diseases of the respiratory type. And my reason for saying that is because we know so little about their epidemiology. Influenza is a very good example. With that we can do absolutely nothing. Nobody knows what to do. There is only one way to control such diseases, and that is by rendering an individual immune. If it were possible to put off an epidemic of measles, we will say, what would result? We would merely be building up a nonimmune population, and when the epidemic did come the number attacked would be greater than ever. In other words, there is no artificial barrier which can be built up by man unless he is capable of rendering an individual immune to the disease, and we do not know how to do it, except in very few instances, like smallpox. Nobody knows how these diseases spread. We say that it is transference of nose and mouth secretions. Nobody has proved that. In fact, the attempt to prove it in the case of influenza was an absolute failure. Even with our knowledge of the cause of diphtheria and the use of the toxin-antitoxin treatment, we have had very little influence on the incidence of the disease. At the present time we can save more lives after people get sick, but as to preventing it, I think we have not been very successful. When one can erect an artificial barrier, as in the case of malaria, it is different. Destroy anopheles mosquitoes and you will have no more malaria. Drain a pond and you will get rid of the cause of malaria. If we were to develop and expand that proposition, if we could get enough money to do it, we should have no more malaria. That is positive. The school which Dr. McCormack of Kentucky speaks of is splendid. That is the best way to organize a school of public health. That is the way you are going to accomplish something. Everything is practical in connection with it, and it is absolutely necessary, in order to succeed, to have some practical experience. Theory does not go very far. It is practical experience that a man needs in this work, and then he will know his limitations; he will know what he can do and what he cannot do.

THE TRAINING OF INDUSTRIAL PHYSICIANS

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It took the medical profession quite a while to realize that the possession of a sound medical education did not per se, qualify a man adequately to carry on the duties of a health officer. The profession has likewise been somewhat slow to recognize that the acquisition of sound surgical technic or skilled diagnostic ability does not qualify a man to carry on the duties of an industrial physician. Just as public health work led to the requirement of specialized training, so with the development of industrial medicine has come the realization that herein lies a specialty in medical science that requires of the physician special theoretical and practical training, which has in the past ordinarily been outside the sphere of medical education. Moreover, it is just becoming apparent that the profession has in a measure failed to grasp an opportunity for the extension of its influence and the utilization of medical knowledge and experience toward the prevention of disability and the shortening of the disability period, the profession's duty to society.

The need for special training of physicians engaged in industrial work has been recognized by the profession none too soon nor too widely. Modern industrial management has been quick to distinguish between the physician trained in industrial medicine and the physician catering to industrial practice.

Urban health officers have long seen in the work of the industrial physician valuable and much needed assistance in constructive health work, for such can be prosecuted intensively among industrial personnel as it can in no other group.

Civic bodies, social workers, large industrial corporations and community organizations have seen that the old-time plant physician did not render to industrial personnel the maximum service that could justly be expected of medical science.

With the realization by these several groups of society of the need for specialized training of medical men, several of our colleges have offered such training facilities.

PRESENT FACILITIES FOR TRAINING[1]

There are thirty-one medical colleges or universities offering training facilities or instruction in industrial medicine or related subjects. Of these there are two schools offering courses in this subject, leading to certification on satisfactory completion; ten schools offer a limited amount of work in the curriculums leading to the degree of Doctor of Medicine; four universities offer some instruction in vocational hygiene during the course leading to one of four degrees in public health, the requirements of which are not standardized, while fifteen schools offering postgraduate public health instruction include limited instruction in industrial medicine or related subjects.

Thus we see that there are, first, inadequate opportunities in the United States for the physician to receive either theoretical or well directed, practical instruction in industrial medicine, and secondly, that such courses of instruction as are offered show a marked lack of uniformity in conduct and standardization both of requirements for entrance and completion (certification).

1. I am indebted to Mr. Royal Meeker of the Bureau of Labor Statistics for the information and data here given.

It is hoped that the profession will interest itself sufficiently in this exceedingly important function of medicine to stimulate a more general inauguration of industrial medical training facilities in our medical schools, with a standardization of requirements for completion and some uniformity in type of courses of instruction.

In anticipating such action on the part of our schools, it is essential that a clear and complete understanding as to the basic requirements of an industrial physician be fully discussed, toward the end that the necessary facilities for the training of such specialists be provided. It is a discussion of this subject that I have been asked to open.

On attaining the degree of Doctor of Medicine, the future industrial physician should look forward to assuredly one year, and preferably two years of postgraduate general medical experience before he assumes the study of industrial medicine. One year of this time, at least, should be spent in internship. The experience to be gained in outpatient clinics, in dispensary work, on emergency service and admitting wards in general hospitals will be found of value. Such postgraduate experience should be supplemented, if possible, by work in night clinics, industrial clinics, industrial health centers, public health agencies and municipal dispensaries. It is in such places that he will study, if he is thoughtful, not only the sick individual, but the sick as a group. Such experience, supplemented by some general private practice, is invaluable. If not socially minded, he will acquire a social point of view, and he will see at first hand the medical, social and economic problems confronting society and awaiting the assistance that the medical profession has in its power to grant.

SPECIALIZED TRAINING

The completion of this instruction and experience, if taken advantage of, should afford a good groundwork

for entering industrial medical training. This is post-graduate work. It should be given in an A-1 college, either in a special department or in a division of the department of preventive medicine.

HYGIENIC TRAINING

Hygienic instruction will fall naturally into two classes, medical and engineering.

The first should cover the subject of vocational hygiene in its entirety. The student should be taught to recognize occupational affections, not only direct, specific occupational diseases, but the indirect effect of occupation on the physiology of man, though masked by subsequent acute intercurrent pathologic conditions. Among these none is more important than that of industrial fatigue. In this subject the basic physiologic facts should be acquired, but he should not allow himself to become too academic, realizing that industry is essentially practical. The student of industrial medical science should here acquire a knowledge of personal hygiene in all its aspects and learn to impart this knowledge to industrial workers in a manner which is characterized essentially by clarity and brevity, so that large groups badly in need of benefits to be derived from this information can thus profit.

Foremost in personal hygiene is dental prophylaxis. Though this specialty in industrial medicine will be handled by the dental profession, yet it should not be introduced in industry without a medical department, and should be a part of such organization. The industrial physician should possess sufficient information on the subject to apply profitably the specialized knowledge of the oral hygienist or dentist.

The student at this time should acquire an extensive knowledge of medical supervisory systems. The experience and knowledge of those engaged in this type of work both in military organizations, public schools, insurance companies, industries and other

organizations should be carefully acquired. He will at this time learn what is meant by, the purpose of, and the limitations of the physical examination in industry. The distinction between physical examination and medical inspection should be clear, with the scope and function of each definitely outlined. He should understand the inauguration and conduct of follow-up systems, and should profit by the knowledge and experience of those engaged in the organization and conduct of visiting nurse systems.

The industrial medical student can also profitably learn of those who have specialized in the subject of recreation and athletics for groups, and be prepared to institute such activities among industrial workers where indicated, in a manner which is consistent with the type of industry, the character of the work performed, and with other circumstances.

Engineering hygienic instruction is ordinarily outside the scope of training of the medical man. Many of these subjects are very broad and have given rise to specialists among engineers. The industrial physician, however, should have a sound knowledge of the subject, for on him will fall the duty of acquiring the desired conditions, even if he himself is not capable of carrying them out in detail. I refer to such as heating and ventilating systems and the problems of illumination, particularly artificial illumination. Elementary engineering principles of exhaust and supply systems should be well understood, and a thorough knowledge of the mechanical principles involved in the design, construction and operation of drinking water systems should be obtained. A study of the engineering phases of housing is of great value. He should acquire knowledge of the various sanitary equipment, such as toilet and wash-up facilities; baths, lockers; water supply and sewage disposal systems; and industrial waste disposal methods, also the specifications, outlay and conduct of restaurant or cafeteria

systems; and he should be able to discuss with specialists in these various fields the basic problems presenting themselves, and so act as the adviser to the industrial management on these problems.

INDUSTRIAL CONSIDERATIONS

It should be immediately recognized by the profession that a physician cannot be successful if he has in his possession only a purely academic knowledge of the various phases of industrial medical work. The position of the physician in industry is unusual in the experience of the profession. He must first learn that his success in this field and the respect that he commands will result, not ex officio by reason of the fact that he possesses the title of doctor, but by the quality and type of his work. Unless he can apply his academic knowledge in a practical manner in full coordination with other branches of the industrial management, he will not receive the consideration, either executive or otherwise, that he should. He must learn that his leadership depends on his ability sufficiently to convince his associates of the soundness of his views and activities. This type of leadership is at the other extreme, however, of that which attempts leadership through the dignity of the title doctor. He must learn that many activities which are theoretically sound are not practical. He must learn, in other words, that there is a compromise between practical industrial medicine and theoretical hygiene, and unless he can with this realization apply theoretical medicine only so far as it is practical, or so far as he can make it of practical value, he will be unsuccessful. He must learn, too, that the respect that he commands from the industrial workers will depend solely on the quality of his work and on his personality.

I know of no other place than in an industrial plant where the medical graduate, essentially an individualistic practitioner, can acquire all this experience and knowledge. It is my opinion, therefore, that the

industrial medical training should be partly theoretical and partly practical—that the theory be given in the classroom and that the practical be given in industrial plants. At least one half of the period of training should be spent actually in the plant, associated with the various departments with which the industrial medical work is so closely associated. He should understand the basic principles of employment management and personnel relations. He should become familiar with training and apprenticeship systems, with the view of there applying preventive medical work. He should know of the organization and conduct of continuation or skilled schools, and if he is thoughtful he will immediately see an opportunity for the practical application of medical supervisory work. He should understand trade tests and their relation to mental tests and psychology. He should understand job analyses, time study and shift systems, and their relation to his academic knowledge of fatigue. He should learn of accident prevention and safety-first organization and activities and consider their intimate relation to first aid medical work; physical examination, mentality, acuity of vision and such hygienic subjects as illumination, of which he has academic knowledge. He should acquire the necessary knowledge to analyze and thoroughly understand and deduct information from various labor force statistics, such as absenteeism, turnover, rates of pay as related to cost of living, housing, food—and hence health.

SOCIAL AND ECONOMIC ASPECTS

The student should understand the various systems of education of large groups and the basic problems presenting themselves in Americanization activities. He should know state insurance, group insurance, liability insurance and such actuary problems as present themselves in the mutual benefit associations and the pension plans. He should become acquainted with,

understand, and enter into the local social and economic problems as such affect the industrial workers with whom he is concerned.

He should, in brief, have a sound medical education; ample practical experience in medical relief; a well rounded knowledge of preventive medicine; a thorough knowledge of vocational hygiene; an understanding of our present day social problems, and be able in the light of this knowledge to apply intensively to groups and in a practical manner the best that the medical profession has to offer to society.

ABSTRACT OF DISCUSSION

Dr. J. W. Schereschewsky, Washington, D. C.: The industrial physician has it in his power to influence enormously the health of a considerable portion of the community in which he is located. Many industrial communities have defective sanitary conditions which make the question of public health a problem of great difficulty. But industries are beginning to recognize more and more the dividends from keeping their men 100 per cent. well all the time. Not only is that good business, not only is it of value locally, but it is reflected in national prosperity and national productivity. The prosperity of the country, of the state or of the city rests on the productivity and activity of its man power, and the ability of its man power to produce rests on health. We must recognize this new group of industrial physicians who are endeavoring to carry on this type of work as powerful agents in the development of public health. I am sorry that the establishment of departments of industrial hygiene has been neglected in our municipalities. I know of only one city, among the first class cities, that has created such a department. The general tendency has been to leave industries pretty much to themselves, and any definite scheme of correlating the work of preservation of health in industrial plants and that of the city health department is very slow in being developed. The industrial physician forms the link by which the city health departments may be coupled with the industries. If they can be linked up they will be able together to make great progress in a general health movement. The industrial physician will form the means by which industrial corporations themselves may be made to take an active interest in the sanitation of their own communities. The general attitude on the part of industrial units is pretty much as follows: We never mix in local politics because we want to be free from the suspicion of being connected with politics in order to advance our own purposes. As a matter of fact,

that is a very short-sighted policy for industrial corporations to take, because most of them are large taxpayers, and they are more intimately concerned than anybody else in the health of the community. Therefore, the training of industrial physicians is one of great importance. Our great universities are giving their students an opportunity of entering a profession which gives a man a high degree of professional qualification, and places him in the situation of being able to influence for good the lives and health of a large number of our fellow citizens.

Dr. Edward Martin, Philadelphia: The keynote of these most valuable papers and discussions today has been cooperation. We feel in Pennsylvania that the public health service means well, but its pull is not always with us, and sometimes it gives us little surprises. Public health service people are scattered around our state doing even they do not know what. No harm is done, as a rule, but we would like to work with the public health service, and we find it difficult sometimes to do so. The Red Cross is giving us splendid help and cooperation. Without it we could do little.

THE CARRIER PROBLEM

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The question of the control of carriers is one of the many instances wherein our knowledge has been enhanced by the experiences connected with the World War. Even prior to the outbreak of hostilities and the necessary concentration of thousands and even millions of troops, this question had begun to receive unusual attention, and had occupied a most important position in health work. Conditions in the army favored the close study of the microbe carrier under circumstances not entirely the same as exist in the civil community, but under conditions similar enough to make the same procedures applicable in civil as well as military life.

The American army experienced several outbreaks of the various communicable diseases, and had opportunity to observe closely the carrier problem. The result of these opportunities has given us much valuable information. At the close of the war and after demobilization of the troops, there were returned to the civil population thousands of men, many of whom were carriers of communicable diseases, as the result of which we shall have many outbreaks and possibly epidemics. This will afford all interested in public health work ample opportunity to make observations; the carrier problem will be entirely eliminated or left unaffected only in proportion to the activities along these lines already accepted by the authorities.

The authorities differ in their opinions as to the influence of the carrier in the spread of disease, but it is generally accepted that the active healthy carrier is responsible to a great extent for the outbreak and even

an epidemic of disease, and is regarded as being many times more dangerous and a greater menace to the community than are the active cases of communicable diseases.

For the purposes of this paper I shall present for discussion but two diseases: epidemic meningitis and diphtheria.

Epidemic meningitis is an infection with the meningococci, whose essential lesions are focused chiefly on meninges of brain and cord. It occurs both sporadically and in epidemics. Rosenau states: "Epidemic cerebrospinal meningitis is always due to the meningococcus; only one epidemic so far studied bacteriologically was certainly not due to the meningococcus. In this the micro-organism responsible seems to have been the *Streptococcus mucosus* or a close relative. The meningococcus, it is believed, gains entrance into the system through the mucous membrane of the nasopharynx; from this position it may reach the meninges directly through the lymph channels, or indirectly through the circulation." The carrier question in this condition has received considerable consideration by various authorities.

Meyer, Voltman, Furst and Grieber studied the carrier problem in cerebrospinal meningitis; they found 1.73 per cent. meningococcus carriers in 9,111 healthy soldiers in the Munich garrison, there being no active cases present, and each soldier being examined one time. A special study was made of 1,911 healthy persons, examined many times, with 2.46 per cent. meningococcus carriers found. Of a total of 11,022 healthy persons, about 2 per cent. examined contained meningococcus in their throats. Isolation of carriers had no influence on the incidence of diseases, and epidemiologically they found only exceptional relationship between the carrier and disease. In one of the years during this study, numerous clinical cases occurred, in another year none, although the number of carriers remained the same in both years. These

authors concluded that extreme painstaking culture detection of meningococcus carriers is unnecessary in combating the spread of cerebrospinal meningitis. They believe that the chief foci, aside from factors not understood in the spread of the disease, seems to be the active cases, especially the mild cases. Rosenau, p. 1980, says: "I do not accept this theory in its entirety; I do believe that the active foci and the mild cases do contribute to the spread, but that the majority of the sporadic cases and outbreaks are due directly to the carrier coming in contact with a person who is susceptible to this disease."

Dr. Simon Flexner says: "Until 1904 epidemic meningitis on a large scale was quite unknown in this country, since which time several epidemics, some severe, have passed over the United States. Prior to 1904, sporadic cases arose at various points." He places the great epidemic wave at about 1905, and subsequent lesser waves and sporadic cases have continued and are of common or frequent occurrence. Rosenau records the first epidemic in Geneva in 1805, and in 1806 Jackson, Welch and Warren investigated cases in Massachusettes, and in New York in 1904 and 1905 there were 6,755 cases, with 3,455 deaths.

Flexner further states: "It is quite evident that the greater prevalence or endemicity of epidemic meningitis is referable to these waves, and it appears that the immediate source of the sporadic cases lies not in other cases of meningitis, but in carriers of meningococcus. It is presumed that these epidemics left behind larger numbers of carriers, who in turn yielded a large number of sporadic cases. It is important to note that even with more numerous carriers and more frequent sporadic cases of meningitis, epidemics do not often occur, or arise. Obvious deductions from this is that other conditions or factors are necessary to convert such sporadic occurrences into an epidemic outbreak." To this theory I heartily adhere, for every.

observation that this great author has made has been borne out in my personal experience in handling cerebrospinal meningitis.

During the latter part of 1917 and the early part of 1918, the city of Alexandria, Louisiana, experienced an epidemic of this disease. At this time Camp Beauregard, one of the largest military camps in the United States, was in full operation, since which time there have been occasional sporadic cases and outbreaks. During 1919 and January of 1920 there was a total of nine cases. These cases all presented classical, clinical symptoms of the acute, fulminating type of epidemic meningitis, and in each case spinal punctures were made, fluid examined microscopically, meningococci found and serum administered intraspinally and intravenously; but in spite of all treatment, death resulted in the entire nine cases. Of these nine cases two were of especial interest epidemiologically. One, a child 4 years of age, contracted the disease and died within forty-eight hours. Cultures were taken from the family, and the mother of the patient exhibited a pure culture of meningococcus. This healthy carrier had previously visited another family, and here another susceptible person contracted the disease; this patient, a woman 43 years of age, died on the fifth day of illness. Out of the 716 exposed to the foregoing nine cases in which cultures were taken, 208 were found to be carriers of the meningococci. It was observed that the meningococci carriers were found in groups; for instance, one of the exposed was an employee of a large mercantile establishment and was found to be a carrier; further investigations proved that seven out of ten of the employees were meningococci carriers. In another instance under exactly the same conditions, very few active carriers were found. As to the percentage of carriers, it is interesting to read statistics from the various authors. Rosenau, on Military Hygiene, gives the following: "Carriers outnumber cases 10 to 30 to one, varying with certain factors:

spring and summer months more numerous, even more so during active stages of epidemics, than in waxing or waning stage. More in severe epidemics than mild, and more where personal contact is favored." He cites a case of sixteen roommates of a soldier stricken with epidemic meningitis, ten being carriers, and another in which 400 carriers were found at one time in a large garrison.

In combating the spread of both diphtheria and epidemic meningitis, the most important step is to have an early report of these cases. When cases are reported and present clinical symptoms that would lead any practical medical man to even suspect the existence of these diseases, they should be treated as such, and every step and precaution taken to prevent their spread. Not only the active cases but all exposed should be isolated and a strict and rigid domiciliary quarantine instituted. Early spinal puncture and laboratory examination of the spinal fluid should be insisted on, and wherever a practical medical man is justified in making spinal puncture. I take the stand that he is justified in replacing that fluid with antimeningococcic serum, regardless of the physical appearance of the spinal fluid. A clear fluid should not throw the physician off his guard, for when centrifuged the bacilli may be found, and the physician should not wait for a cloudy, murky fluid before administrating serum. Should the laboratory findings show that the infection is due to other bacilli, he can then institute proper specific treatment. Cultures should be taken of all of those exposed. These cultures should be properly taken, brought to a laboratory, incubated for sufficient length of time for growth, and all gram-negative diplococci found should be classed as meningococci. These carriers should be disinfected by the use of antiseptic nasal washes, and in this connection, my experience has been that the best results have been obtained by the use of a 2 per cent solution of Dichloramin-T. It

was observed that many carriers after using Dobell's solution and other ordinary nasal sprays for a period of a week or ten days, when cultures were taken again exhibited a pure culture of meningococci; these patients, when treated with a 2 per cent. solution of Dichloramin-T for a period of three days, exhibited a negative culture.

Usually the diphtheria bacillus enters by the mouth or nose, and the lesions are usually localized on the mucous membrane of the throat, nose, larynx and upper respiratory tract. The bacillus leaves the body in discharges of the nose and mouth. The bacillus is transmitted directly from one person to another by kissing, droplet infection, coughing, sneezing, etc., or indirectly from one person to another, such as by pencils, food, fruit, etc., that have been mouthed by the infected person and then by the susceptible person. It was in the case of diphtheria that the dangers of the human carrier was first recognized. It is now generally known that a person coming in contact with a diphtheria patient is likely to harbor the germ, though he himself remains in good health, and that a certain percentage of the population harbor the diphtheria bacillus even though they have had no known association with the disease. It has been demonstrated that in families where no precautions were taken to isolate the sick, as high as 66 per cent would harbor the germ; and when precautions were taken as low as 10 per cent. were found. The percentage of carriers at large is problematic; examinations show bacteria which are harmless, though they present morphologically the appearance of diphtheria bacilli. The dangerous carrier, I believe, is the carrier of the virulent strain usually obtained by coming in contact with active cases, or convalescent, or the third person who has come in contact with the patient.

The time necessary for the bacillus to disappear from the throat varies greatly. Beebe and Park found

that in 605 cases, it disappeared from 304 in three days after the disappearance of the false membrane. In 176 cases they persisted for seven days, in 64 cases for twelve days, in 36 for fifteen days, in 12 cases for three weeks, and in 4 cases for four weeks. It has been my rule to keep the patient isolated and most especially in school work, until we obtained three negative slides at three day intervals, and two negative slides from the carrier.

All exposures of diphtheria should be treated in exactly the same way as those of meningitis. Vaccination in diphtheria for immunizing purposes has met with reasonable success in cases under my observation, and is worthy of trial in epidemic meningitis. The immunity from the initial attack in both of these diseases varies, and I do not believe that we enjoy an immunity for any great length of time. Vaccination of a community, I believe, is impracticable in either of these conditions; but, I would insist, as a matter of protection and observation, the immediate family, attending physician and nurses should be vaccinated. If this is done, we shall have, within a reasonable length of time, statistics on which we can draw some definite conclusions.

The question of the chronic carriers, those that resist all forms of treatment, who do not respond to any of the antiseptic washes, should be referred, after a period of four weeks to an ear, nose and throat specialist for thorough examination. In this length of time, with plenty of fresh air and sunshine, the average carrier should be disinfected. In two cases after a period of six weeks' treatment, these carriers were referred to an ear, nose and throat man; in one the remains of old tonsils were found, and in another adenoids. On their proper removal, cultures were taken again, and these children found negative.

Antisepticizing the nasal passages, after all, is very much akin to the antisepticizing of the gastro-intestinal tract. The infection may be either adenoids,

or fissure of the crypt, ethmoid or sphenoid and of the various anatomic ramifications of the nasal passages. Still, we are justified in following such lights as we now have before us.

ABSTRACT OF DISCUSSION

DR. J. P. LOBENHOFFER, Alexandria, La.: I was associated with Dr. Abbott in the investigation of the meningitis epidemic he referred to in his paper. The conditions we found were rather unusual. The large number of carriers is to be explained by the fact that we took only exposures. The figures given by the Army, of course, showed the true percentage of carriers among nonexposures. There were a number of sporadic cases present in Alexandria, and we found 22 per cent. of carriers in groups in different houses. Some of them would show rather strong growths of meningococcus. We used culture medium consisting of laked blood serum. Using a rich culture medium facilitated our work a great deal. We agglutinated all the different strains. A very peculiar case was that of a child who died suddenly. The spinal fluid was withdrawn about three hours before death. It was as clear as distilled water, but we found in the centrifuged sediment quite a number of gram-negative diplococci which we suspected to be meningococci. On making the culture and agglutinating we found that group to be meningococci.

DR. H. J. NICHOLS, Washington, D. C.: More attention must be paid to carriers. The only drawback seems to be lack of laboratory facilities for handling the problem from that point of view. It is not generally enough recognized among sanitarians and administrators who are not working in laboratories, how difficult this problem is from the laboratory point of view. For instance, in handling diphtheria carriers it is not enough to find a diphtheria bacillus in someone's throat. To be of any real value the bacilli must be tested for virulence and this test means more work. The same way with meningococci. We find meningococci in a number of people's throats, and some of them may be irregular types and not produce disease at all. The regular meningococcus and the parameningococcus are the only two varieties which should be regarded in carrier work. But there are a number of other meningococci of irregular type, which apparently are not so significant and they must be separated by further work. So that from the laboratory point of view this problem requires a good deal of equipment and personnel, and that is something which the practical administrative officers must be made to realize. They must support a larger force in the laboratory if we are going to do this carrier work, than we have had heretofore. With regard to treatment: Various methods have been advocated in the treatment of carriers.

One of the local antiseptics that has been advocated had the effect of killing off the other germs in the throat and allowing the meningococci to grow, and as the other organisms of the throat disappeared there resulted a pure culture of meningococci. The average temporary carrier will clear up if he is left alone and given fresh air and all that sort of thing, but the most favorable results, in the case of the chronic carrier, both in diphtheria and meningitis, apparently have been from tonsillectomy. In diphtheria particularly the crypts of the tonsils are the places where the bacilli hide. If you remove the tonsils, the case clears up.

Dr. G. W. McCoy, Washington, D. C.: I was disturbed by the high fatality report given by Dr. Abbott, nine cases without recoveries. I wonder whether they made type determination of the organisms involved. The use of serum was so unsatisfactory that perhaps the types are not represented in American serums. We like to obtain cultures of that sort, because then we can pass them on to the manufacturers for use in the immunization of the horses which are producing the serum. I am not very optimistic about any valuable result being obtained from such vaccination experiments as Dr. Abbott mentioned. I do not know of anything more likely to be misleading or anything harder to interpret than uncontrolled prophylactic vaccination experiments. We have had a great deal of experience with that in influenza, and the results have been most misleading. It is only when you vaccinate a portion of a number of persons in a given group, holding the others as control, that you are going to get any data worth considering. With respect to the carriers, and particularly with regard to the meningococcus carriers, I believe that the best solution of that problem, in the case of the chronic carriers, and those are the only ones that need especially concern us, is to have them get outdoors, get lots of fresh air, and good food and have generally improved hygienic conditions. That is what will give us the best results. Our own observations with attempted disinfection of meningococcus carriers have been discouraging.

Dr. C. A. Earle, Des Plaines, Ill.: Ordinarily when a culture is taken from a child with clinical symptoms of diphtheria, and the report comes from the laboratory that it is positive, we conclude that it is diphtheria. Is it possible for a child with streptococci, staphylococci or even a Vincent's angina, to be a diphtheria carrier? If it is possible, does it occur frequently?

Dr. A. Parker Hitchens, Indianapolis: As a result of previous conditions in Alexandria it seems that an endemic focus of meningitis has been established there; if this is the case, we have a rare opportunity for studying its epidemiology. With regard to the meningococcus in its relation to carriers, our position is about as it was with regard to the

diphtheria bacillus before the work of Wesbrook, Hill and others in Boston. We can go into any community and find at least 1 per cent.—possibly much more—of carriers of gram-negative cocci which have many of the characteristics of meningococci. Such knowledge would be about as valuable as knowing the percentage of carriers of diphtheria-like bacilli there were in a given region; this would tell us nothing concerning the presence of potentially pathogenic or true diphtheria bacilli. In diphtheria we depend on virulence tests. Whether or not such a thing may be applied to the meningococcus remains to be seen. It was shown by Robinson that by suspending meningococci in 25 per cent. guinea-pig serum, their virulence for mice might be studied with a considerable degree of accuracy. Whether or not such a test might have value in connection with the identification of carriers to true pathogenic meningococci, I do not even wish to suggest. I believe it would be worth while to do some work along such lines, however.

Work on carriers which does not include an attempt at typeing is not of very much value.

Dr. Charles M. Abbott, Alexandria, La.: If the legislative bodies of the state of Louisiana will give Dr. Dowling unlimited money, like Congress has given the Public Health Service, we can get at this thing in a much better way, but Dr. Dowling cannot get all the money he wants, or, in fact, all the money he needs. The Doctor is right as to the question of classifying the meningococci. Medical men know a whole lot more about diphtheria than they do about meningitis. We have a serum that we know something about. I am not bacteriologist enough to go into details, but the result is what we want. A child very seldom dies of diphtheria nowadays. But when you see nine cases of meningitis, and every one of the patients dies, then it is time to find out what it is. As to whether we had specific serum for the specific strains we were dealing with, I do not know, but with a high death rate we evidently did not have it. As to our test group, getting our strain, we do not do that because our equipment is not such that we can do it. We did do agglutinations, using stock serum with our growths, but I do not care much about stock serums, and the more I use them the less confidence I have in them. In Alexandria we have a good field in which to study the meningococcus carrier question. With sufficient money and personnel and equipment we could study this question very thoroughly, but without it we cannot do so. We are doing the best we can, however, and I am more firmly of the opinion than ever that meningococci carriers are directly responsible for these sporadic cases.

TYPHOID REDUCTION IN SOUTH CAROLINA

COMPARATIVE RESULTS IN COUNTIES WITH AND WITHOUT HEALTH ORGANIZATIONS

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The vital statistics department was organized in South Carolina in 1915, and we have no accurate records of deaths from typhoid previous to that year. In this paper I will attempt to show how typhoid fever has decreased, and what methods are being used to effect this decrease. The decrease has been gradual since 1915, with the exception of 1918, during which year the army camps brought more than a hundred thousand people to the state. This does not refer to soldiers, but to workmen and camp followers who were not under army restrictions, and we credit to this fact the increase in 1918, as the cities in which these camps were constructed showed very large increases, some of them doubling their number of deaths of the preceding year.

ORGANIZATION

In 1917 the first county health unit was formed in South Carolina. This organization was perfected in Orangeburg County, one of the largest and most prosperous counties in the state. The unit consisted of a physician as director, with a corps of inspectors and carpenters. Greenwood County also took up the work during the year.

TYPE OF WORK

The ultimate object of the health unit was to stamp out typhoid fever and other intestinal diseases. The

type of work was both educational and constructive. The physician gave lantern slide lectures in each school district on various health subjects, but stressed intestinal diseases spread by bad sanitation. The inspectors made a survey of the district, visiting each home and securing data as to living conditions of the family and sanitary surroundings of the home. Wherever possible the inspector persuaded the householder to put in a sanitary privy; if the inspector failed, then the physician made a personal visit to the home. The carpenters assisted in the construction of the privies. Specimens of feces were collected and

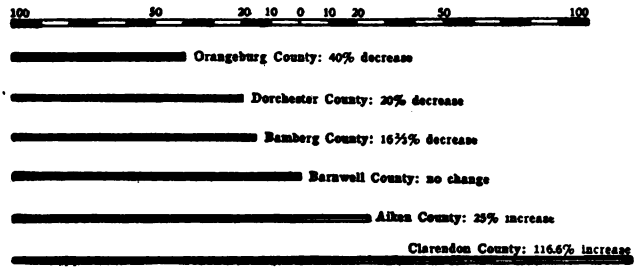

Chart 1.—Increase and decrease in incidence of typhoid 1917-1919: Orangeburg has had a county health department for three years. It has an area of 960 square miles and has made the same appropriations each year as Darlington with 600 square miles. Other counties compared have had no city or county health organizations.

examined for intestinal parasites, and when the patients were found infected they were given free treatment. By circulars, posters, personal letters, exhibits, school contests, public lectures, newspaper publicity and personal interviews the importance of sanitation was constantly kept before the public.

GROWTH AND PROGRESS OF COUNTY ORGANIZATIONS

In 1918 four full-time county health organizations were perfected, in 1919 six and in 1920 seven. In 1918 medical inspection of rural schools was made a part of the work, and public health nurses were added

to the county units. Darlington County is probably the only county in the South in which every rural schoolchild, white or colored, has received a medical examination and a follow-up visit from a nurse.

Each organization is now designated as a county health department, and the physician has by legislation been made the county health officer, and his duties are prescribed. Counties which in 1917 appropriated $2,000 for this work are now appropriating $5,000, and in addition cars are furnished the nurses by local organizations. Our state appropriation for 1917 was $7,000 for county health work; for 1920 we have been given $27,000, a portion of which will be used for a traveling moving picture unit.

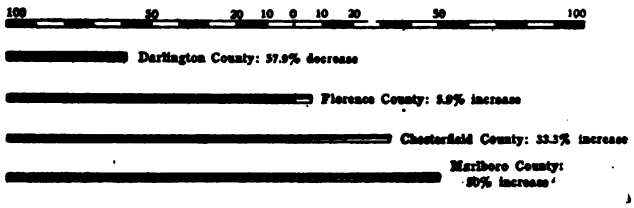

Chart 2.—Increase and decrease in incidence of typhoid 1917-1919: Darlington has had a county health department two years. Florence has had a city but no county health department. Chesterfield and Marlboro have had neither city nor county health departments.

DIFFICULTIES ENCOUNTERED

In 1917 comparatively few sanitary privies were built —pioneer work is always difficult. The war with all its effects, the shortage of labor and material, the physical unrest, the breaking up of departments by the volunteering of men (every county director but one, as well as the state director, having volunteered and entered service) crippled the work for a time. The present high prices and low salaries are keeping up the difficulties, but with it all we have something to show for our work.

RESULTS OF WORK

Each county in which we have worked two years has shown a decided decrease in typhoid; the first year

an increase is usually shown, owing, perhaps, to better reporting. We have selected this disease as a type of intestinal disease and have selected Darlington and Orangeburg counties for comparative results with surrounding counties having no health organizations, as these counties have had no campaigns of giving free typhoid inoculations. We are giving results from each county touching Darlington where no work has been done, and each touching Orangeburg where no work

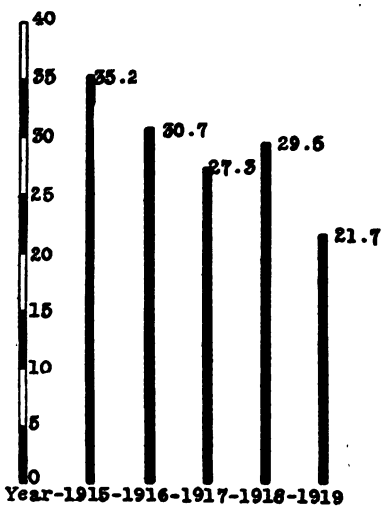

Chart 3.—Death rate per hundred thousand.

has been done, with the exception of two black counties. These two counties with a large black population give poor reports, as so many of the negroes are unattended by physicians and "fever" is given as a cause of death. Mr. C. W. Miller, our vital statistician, who helped me to get up these statistics, thought the statistics of these two counties unreliable.

It will be noticed (Chart 2) that each county touching and compared with Darlington shows an increase, while Darlington shows a decrease in typhoid—Darlington shows a decrease of 57.9 per cent. from 1917 to 1919.

Orangeburg shows a decrease of 40 per cent. (Chart 1). This is one of the largest and most populous counties in South Carolina, and it would naturally take longer for results to show. The state at large has gradually decreased its typhoid death rate, as illustrated in Chart 3, from 35.2 per hundred thousand in 1915 to 21.7 per hundred thousand in 1919.

CONCLUSIONS

The reduction of typhoid fever is largely a matter of education. The building of privies alone will not check typhoid entirely, but will reduce it. We have purposely held no campaigns of free inoculations of antityphoid serum in Darlington and Orangeburg counties, and the results shown are due to educational work and privy building alone, and not to inoculations. If this disease can be so materially reduced by education, it would seem that all other diseases of which the cause is known could be reduced in a similar way.

A county health organization is necessary, as one physician or nurse without assistance is not adequate for the supervision of the health conditions of a whole county.

ABSTRACT OF DISCUSSION

Dr. W. S. Leathers, Jackson, Miss: In Mississippi we have organizations at work in different counties, and the results we have obtained are along the same lines which have been indicated by Dr. Riser. In one county in the state we had about 230 typhoid cases a year. This county was leading the state in typhoid. In that county we organized one of these units and conducted what we termed an intensive health campaign. We built about 2,000 privies, visited every home in the county, obtained the names of every man, woman and child we could find and tried in every possible way to get in touch with the people, and to determine the conditions which existed in the county. We instituted measures which we thought were necessary for the prevention of intestinal diseases. This intensive campaign was conducted in 1917. In 1918 there were fifty cases of typhoid and eight deaths. That is an example of what may be accomplished in every county in every state in the South; in fact, that may be done wherever typhoid exists. In 1914 there were approximately 6,066 cases of typhoid in the state. In 1919 there were 3,660 cases of

typhoid. We have been able to get 90 per cent. of the doctors of the state to report their morbidity statistics for a period of six years. We assume that there are errors in these reports, but the errors are uniform, in all probability, for the same doctors have been making the reports. The decrease in figures is unmistakably very significant, and we can draw from these figures a very definite conclusion so far as reduction of typhoid fever is concerned. The education of the people is basic. One of the most effective measures is personal demonstration. We ought to go into the various communities and work with the people, and show them by practical demonstration what to do. We can demonstrate in a community how to build a privy and get people to build privies by demonstration methods, and illustrate that by such methods we will get very definite results in the reduction of typhoid fever. The time is rapidly approaching when typhoid fever will be a relatively rare disease.

Dr. John D. McLean, Philadelphia: It has been stated that the incidence of typhoid fever indicates the health of a state or of a community. If that be so, the report we received in Pennsylvania last week, would indicate that Pennsylvania is becoming a very healthy state indeed. We have found that the greatest number of epidemics have been caused by carrying the disease from one person to other persons through the water and through the milk. If that be true, then the lessening of typhoid fever must be effected through supplying pure drinking water and pure milk. Pennsylvania, therefore, has determined, as far as it possibly can be done, to control the water supply of the state. We have also determined that the people shall drink good milk, clean milk. To bring this about we have, with other measures, drawn two model health ordinances. One provides how an organized community can get pure water to drink, and the other provides how this community can get pure milk to drink. We ask those responsible for the laws and for the expenditure of the finances in these communities to pass these ordinances. We hope to secure pure water and pure milk. Educate the public to the need for these things so that they will tell those responsible for the expenditure of their money that they must install a filter plant or they must install a pasteurizing plant for milk.

How is that done? Choose from among the existing agencies one, the Red Cross, the Emergency Aid, the Y. M. C. A., the Y. W. C. A., whatever it may be in that particular community, and create an advisory board to tell the councilors that they represent public opinion, and ask them to spend the money. In Pennsylvania we investigate every case of typhoid and take measures to prevent a spread of the disease and in that way we have lessened the number of cases.

Dr. G. C. Chandler, Shreveport, La.: The sources of these diseases are the excretions of human beings, and in getting

rid of these excretions and the germs they contain you will have a healthy city and save many lives. One of the best means of suppressing typhoid fever is to take milk samples, and wherever you find water in the milk, fine the milkman the limit. By doing that you will stop the spread of typhoid fever from milk. Typhoid fever can be stamped out easily if you know the source of the disease. Shreveport, up to 1918, used filtered bayou water for its water supply. In 1911, when they had about the lowest number of deaths from typhoid fever, there were 104 deaths among the residents of Shreveport from fevers, diarrhea and dysentery. There were only about 25,000 people there then, and that was about the lowest death rate we had.

Dr. John A. Ferrell, New York City: The public health work in South Carolina is a demonstration which carries conviction to the people and to their legislative representatives. There is uniformity of opinion that to succeed in public health work we must first educate the public. There is some difference of opinion as to the best method for conducting the educational program. The opinion is held by some enthusiasts that if you lecture to the people and distribute literature among them they will readily accept what you have to say, do what you tell them to do, and vote the money required for the work. To these enthusiasts the control of disease is a very simple undertaking. Once you have the knowledge as to the cause of the disease and its mode of spread, all you have to do is to tell the people about it, these optimists believe, and the job is done. Health officers of extended experience have learned that the people can be interested in control measures, that they are open minded, but that they have had unsound advice on many occasions. They are ready to be shown in terms that are simple and understandable, and when convinced that the proposed program has merit from a business standpoint and will yield a satisfactory return on the investment you may depend on them to give support to their leaders in public health. This method of developing public health work has been followed in a number of states, particularly in the South. South Carolina, for example, in the year 1908 had less than $10,000 state appropriation for health work. The appropriation voted by the legislature which recently adjourned approximates $155,000 a year, exclusive of the appropriation for tuberculosis work. The growth in a number of other southern states has likewise been phenomenal. Dr. Riser recently reported that the South Carolina legislature actually appropriated more money for the health program than was requested by the executive officers of the state board of health. That the people in these states have been convinced that public health work is worth while is evidenced by the growth in the state appropriations for eleven southern states from about a quarter of a million dollars in 1910 to more than two million dollars at present. Ten years ago a full

time health officer in these states was the exception. Now, they are numerous and, in the near future, I believe, will be the rule. The state's funds are being generously supplemented by towns and counties for the purpose of establishing local departments of health work in cooperation with the state board of health. These developments should be a source of keen gratification to the public health officers who have had the wisdom and ability to give the people a large value for their investments in public health.

DR. LUTHER A. RISER, Columbia, S. C.: The figures I gave here are not figures of typhoid fever cases, but of typhoid fever deaths. Dr. Leathers spoke of the necessity for demonstrations. I consider demonstrations as part of this educational work; it is all educational, but the demonstration is just a type of the educational work. Dr. Chandler spoke of the reduction of typhoid fever as being an indication of the reduction of other diseases of that type. It is also an indication of the reduction of all types of diseases, because in these counties you will find a reduction of tuberculosis just as well as you will of typhoid fever and intestinal diseases, and the death rate has also decreased in those counties more than it has in those counties where no educational work of this type has been done.

HEART DISEASE AS A PUBLIC HEALTH PROBLEM

LEWIS A. CONNER, M.D.
NEW YORK

In presenting a plea for a wider recognition of the public health aspects of heart disease it is well to begin with an attempt to visualize, in some degree at least, the size of the problem involved. This is not altogether an easy matter, for it is obvious that neither statistics illustrating the incidence of the disease nor those showing the mortality from such disease will give a complete idea as to the importance and size of the problem. The economic aspects of the subject are clearly related to the degree of disability that the disease entails and the length of time that such disability is likely to exist. Accurate information on the latter points is not available, and I shall not dwell on this aspect of the subject now further than to remind you of the familiar facts that in patients suffering from disease of the heart a certain degree of physical disability often exists for a good many years, and that before death finally occurs there is usually a period of complete disability and dependence on others, which may extend from several months to several years.

If we turn now to the question of the incidence of heart disease and its mortality, we find at hand statistics that will enable us to form a fairly accurate judgment concerning the size of the problem. The figures of the local draft boards during the war show that among the men of the country of military age the rejections for organic disease of the heart amounted to 30.74 per thousand. Of the men accepted by the local boards and subsequently examined at the camps by

army surgeons, the rejections for heart disease averaged 11.56 per thousand. This brings the total rate of rejections for heart disease up to 42.3 per thousand, or 4.25 per cent. In other words, among 5,000,000 men of military age, more than 200,000 were disqualified for service because of heart defects. It is doubtless true that in these examinations a good many men with organically sound hearts were included among those rejected; but the error is offset, in part at least, by the fact that many men with the milder forms of disease of the heart were accepted for military service. In considering these figures it should be remembered that they fail to include two very important types of heart disease—that due to syphilis and that due to degenerative changes—which are only rarely seen in men of military age. Statistics from civil life are not easy to obtain. Almost the only ones available are those of results of the examination of applicants for life insurance policies, and these vary considerably in the different companies depending on the caution or liberality exercised in the acceptance of applicants with what seem to be minor heart defects. In one of the large and carefully managed companies, during the period from 1915 to 1918, the rate of rejection for heart defects was 24.4 per thousand, in spite of the fact that persons with the more obvious forms of heart disease are not likely to apply for insurance.

A report of the Department of Health of New York City, covering over 250,000 examinations made by school medical inspectors during the year 1918, revealed an incidence of heart defects among schoolchildren of 1.6 per cent. This would indicate that among the schoolchildren of New York there must be approximately 20,000 with evidences of some cardiac disorder.

When we turn to mortality statistics for information concerning the size and importance of the heart disease problem, we find some very interesting comparative figures. The accompanying table is taken from a

recent instructive statistical paper on this subject by Mr. Frederick L Hoffman, vice-president and statistician of the Prudential Insurance Company of America. From this table it is seen that diseases of the heart were responsible for almost one eighth of the deaths of all ages and for almost one fifth of the deaths in persons of 40 years of age and over.

DEATHS IN THE U. S. REGISTRATION AREA DURING 1917

	All Ages		Ages 40 and Over		
	Number	Per Cent. of All Causes	Number	Per Cent. of All Causes	Per Cent. of All Ages
All causes	1,066,711	100.0	566,328	100.0	55.0
Pulmonary tuberculosis	98,290	8.7	35,151	6.0	37.7
Cancer	61,429	5.8	55,929	9.5	91.0
Cerebral hemorrhage and apoplexy	62,417	5.9	59,822	10.2	95.8
Lobar pneumonia	74,577	7.0	43,236	7.4	58.0
Kidney disease	82,657	7.7	70,725	12.1	85.6
Heart disease	128,719	12.1	110,426	18.8	85.8

These various figures, then, give us some idea of the numerical size of the heart disease problem in the different age periods and show the affection to be one of the more common of the chronic diseases, even during childhood. They do not, however, necessarily prove that affections of the heart should be singled out from many other common diseases as deserving of special attention from the standpoint of the public health. Indeed, the movement, which is now gathering headway, for the improvement and coordination of existing agencies for the relief of sufferers from heart disease and for arousing interest and cooperation in the problems of prevention has come into existence not so much because of the frequency of cardiac disease as because of the conviction that our present methods of dealing with the problem involve enormous economic waste and immeasurable suffering, much of which is unnecessary and preventable.

AGENCIES IN NEW YORK

It may be of some interest to review briefly the history of this movement so far as it concerns New York

City. The initiative came from a small group of social service workers and hospital physicians who were much impressed by the lamentable need of facilities for the proper after-care of cardiac patients who had been discharged from the hospitals after more or less complete reestablishment of their heart compensation. In many instances the direct cause of the breakdown had been the laborious character of the work engaged in; and the two essentials for the preservation of their regained health—prolonged convalescent care and an opportunity to secure work of a less exacting sort—were nowhere to be had. The first tentative effort to remedy these conditions came in the establishment in 1911 of an outpatient heart clinic in Bellevue Hospital under the charge of Dr. Hubert V. Guile, and the success which attended this modest undertaking has been due to Dr. Guile's enthusiasm and perseverance and to the sound principles on which the clinic was based. It was held in the evening in order to secure the attendance of working patients. It included periodic examinations of all enrolled patients, no matter how well they might feel, and, perhaps most important of all, it had the services of an intelligent social service worker whose duties included the visiting of the patient in his home, the education of the patient and his family, the improvement of home conditions, and often the securing of some lighter or more suitable form of work. The results of the clinic in saving heart cripples from periods of decompensation and in enabling them to continue as wage earners have been surprisingly successful, and it has served as a model for the large number of dispensary heart classes that have since been opened.

In the following year (1912), an effort to solve this urgent problem was made along quite different lines by the formulation of plans which led to the incorporation of the Trade School for Cardiac Convalescents. This had for its object the maintenance of a country con-

valescent home, in which laboring men with crippled hearts could be given protracted convalescent care under favorable conditions and careful supervision, and at the same time could be taught a more suitable and less exacting trade. This arrangement, which was frankly an experiment, yielded much useful and interesting information. It showed that, under favorable conditions and supervision, such heart cripples could perform fairly laborious work for the greater part of the day, not only without injury, but apparently with actual benefit to their damaged hearts. Although this proved to be an expensive method of dealing with the problem, it served as a valuable object lesson to the larger convalescent homes, and was instrumental in opening the doors of these to a class of patients which up to that time had been looked on as unsuitable for such institutions.

In the meantime, interest in the problem of the heart cases had been growing steadily, so that in 1915 the time seemed ripe for the formation of an organization which should deal in a comprehensive way with the various problems related not only to the care and relief of heart patients but to the even more important matter of prevention. The result was the incorporation of the Association for the Prevention and Relief of Heart Disease. The objects of this association, as defined in its first statement, were: to gather information on heart disease; to develop and apply measures that will prevent such disease; to seek and provide occupations suitable for heart disease patients; to promote the establishment of special dispensary classes for such patients; to extend the opportunities for adequate care of cardiac convalescents; to urge the provision of permanent institutional care for such cardiac patients as are hopelessly incapacitated for self support, and to encourage the establishment of associations with similar objects in other cities.

In the furtherance of these objects, a central office was opened and an executive secretary secured. It

was felt that the first and most promising field of activity was the encouragement of the opening of special cardiac classes in the dispensaries throughout the city, modeled after that of Bellevue Hospital. The response on the part of dispensary physicians was prompt and cordial; the difficulty in most cases lay only in the securing of funds for the employment of a social service worker, without whose services, it was realized, the classes could not hope to operate successfully. In spite of this difficulty, our entry into the war found New York City with twenty or more of these cardiac dispensary classes in successful operation. For the period of the war it was found necessary to suspend the activities of the association; but a considerable number of the cardiac classes continued to function, in spite of the great dearth of physicians. The work of the association was resumed last autumn, and has rapidly gained momentum. Its accomplishments up to the present may be thus outlined:

1. The encouragement of the formation of special cardiac dispensary classes. At present twenty-seven such classes are in operation, in which some 3,000 heart patients are registered. Most of these classes are designed especially to care for working men, and for that reason are held in the evening, There are, however, among them eight classes devoted to the care of children with heart diseases.

In order to bring together the physicians engaged in the dispensary care of heart patients, there has been formed, under the auspices of the parent organization, an association of cardiac clinics, in which the special problems of these clinics are considered. As a result of these conferences, some progress has been made in standardizing the work of the clinics; that is, the classification of patients with respect to their degree of disability, the types suitable for treatment in convalescent homes, methods of treatment, etc.

2. The increasing of facilities for the care of suitable heart patients in convalescent homes.

Up to the time interest was aroused in the welfare of the cardiac patients, convalescent homes, almost without exception, discriminated against this class of convalescents. The much more liberal policy which has since been adopted by most of these institutions has been due largely to the example set by the trustees of the Burke Foundation at their splendid convalescent home at White Plains. Here, under the wise and far-sighted policy of the director, Dr. Frederick Brush, convalescent heart patients, both adults and children, have been accepted in steadily increasing numbers, and have had the advantage of a protracted stay and of suitable occupational therapy. In all, more than 2,000 such patients have been cared for by this institution during the last six years, and the results in properly selected cases have been most gratifying. At present the convalescent hospital maintained by St. John's Guild is arranging to provide for 150 children with heart disease, and the doors of various other similar institutions have been opened to this class of patients.

3. The arousing of greater interest in the welfare of schoolchildren with heart disorders. It is recognized that the proper medical examination and supervision of children during school age offer exceptional opportunities, not only for the shielding of crippled hearts from further damage, but also for the prevention of the type of heart disease prevalent at that time of life. The association has given its active support to various efforts directed toward these ends, such as more frequent and complete physical examinations of schoolchildren, with special attention to diseased tonsils and teeth and to adenoids; greater protection in the schools for the heart cripples, and education of the parents, the teacher and the family physician as to the importance of tonsillitis, slight rheumatic and "growing pains," and as to the need of greater care during convalescence from the acute infectious diseases, etc.

The question of the desirability of the segregation of cardiac children in special classes in the schools is being given careful study. Through the cooperation of the board of education, this experiment is being carried out in several of the schools, under supervision by certain of the dispensary heart clinics; but it is yet too early to know whether or not the plan is deserving of general application.

4. The accomplishment of a good deal individually by the social service workers in the various dispensary heart classes, in the matter of providing heart cripples with more suitable occupation. During the last two or three years, however, a great part of this burden has been taken over by the Employment Bureau for the Handicapped, maintained by the Hospital Social Service Association. In this extremely difficult field of practical philanthropy this bureau has achieved notable success, partly no doubt because of the unusual demand for labor of all sorts, but chiefly because of the exceptional degree of intelligence, perseverance and tact displayed in the carrying on of the work.

PREVENTION OF HEART DISEASE

Progress in that phase of the problem which relates to the *prevention* of heart disease has, naturally, been slowest and least appreciable. This subject is so extensive and so many sided that a discussion of it cannot be included in this short paper. It seems evident, however, that efforts in this direction must follow the three lines which correspond to the three great causes of heart disease; namely, the prevention of rheumatic infection and its complications, the prevention of syphilis and its late effects, and the postponement of the degenerative changes incident to the later years of life. That the task is beset with difficulties does not justify us in failing to undertake it; rather its difficulties, as well as its size and its importance, call on us the more loudly for a determined and sus-

tained attack on it. Such an attack obviously demands concerted action on the part of investigators, clinicians and various public health organizations. It would seem as though the coordination of these various agencies could best be accomplished through a national organization formed on the lines of the Association for the Prevention and Relief of Heart Disease in New York City. There are signs in many parts of the country of an awakening of public interest in the heart disease problem. Special heart clinics are already in operation in Boston, Chicago and other cities, and the formation of a national organization dedicated to this object would seem to be the next logical step. The history of every national organization of similar character has shown the enormous gain in momentum that results from such coordination of effort and unity of purpose.

121 East Sixty-Second Street.

ABSTRACT OF DISCUSSION

Dr. Alexander Lambert, New York: In the prevention of heart disease neither sanitation nor inoculation will answer. It is a question of personal hygiene and education, and the disease when once acquired handicaps permanently. The great cause of heart disease up to the age of 30 is sepsis or rheumatism. Seventy-six per cent. of rheumatic children under 10 years of age have affected hearts. Of 500 cases of rheumatism in all ages studied in Bellevue Hospital a few years ago, 56 per cent. showed some form of chronic heart disease. After 30 years of age, another great cause of heart disease is syphilis, and syphilis injures the heart and arteries not in the late secondaries, as is generally believed, but often in the early secondaries. Such a syphilitic usually breaks down at about 45. After 50 years it is the degenerative process producing atheroma which causes most of the cardiac diseases. The form of heart disease which injures most is that chronic condition around the auriculoventricular valve, closing slowly but surely, forming mitral stenosis. Although this begins in the early years of life it usually cripples the patient between 33 and 38 years of age. What is the best thing to do with these people? Dr. Guile, who founded the cardiac clinic in Bellevue Hospital, taught his cardiac patients three things: to avoid alcohol, tobacco and stairs. It is not a question of the valves involved, but of the myocardium. Each man must learn to gage the ability of

his heart to withstand certain exertions and to learn the limitations of his exertion. It is the duty of the clinician to find out when and under what conditions these morbid processes begin and what can be done for them during the living hours of the patient. In Bellevue Hospital the total number of rheumatics since 1914 has continually diminished and there has been practically an even diminution in the total admitted of all ages. Since 1914, also, the dental clinics have been struggling with the teeth and the children's clinics with tonsils. Since 1914, a diminution is shown of the ratio of cases admitted between 20 and 30 years of age compared with the total number of cases coming into the hospital. So that for these years both the total number and the ratio to total number have diminished; hence attention to both tonsils and teeth has helped. I found that 65 per cent. of rheumatics showed bad teeth and 35 per cent. showed bad tonsils. Bad teeth seemed more to blame than bad tonsils for all ages. The syphilitic cardiacs predominate over the septic types in the hospital today; previously the rheumatic cardiacs formed the majority. The prevention of sepsis, syphilis and arterial degeneration is what must be taught to improve public health in relation to heart disease.

Dr. G. C. McKinney, Lake Charles, La.: Dr. Conner mentioned that 1.6 per cent. of schoolchildren in New York City have heart lesions, and Dr. Lambert drew attention to the teeth and tonsils. I would like to call attention to the fact that Dr. Lambert said "bad tonsils" and not "hypertrophied tonsils," because a tonsil may be very bad although not larger than a peanut. This expression "hypertrophied tonsils" should be dropped from the medical nomenclature. It means nothing whatever.

Dr. William H. Mercur, Pittsburgh: The one special feature of Dr. Conner's work which always impressed me as most valuable and practical he did not especially emphasize. He devised and carried out a plan by means of which suitable occupations can be taught to hospital patients who are suffering from advanced cardiac lesions; patients whose compensation constantly breaks down whenever their former occupations are resumed. Those of us who are constantly seeing such patients must have observed with what regularity they return time and time again, either for hospital or private care, and always with greater frequency, until finally they can no longer work. A very large proportion of these patients, if taken early, and proper facilities given them, can be educated to earn their living in other ways, by carefully selecting more suitable occupations for them, in which their physical exertion is not out of proportion to their reserve cardiac strength. Such patients can thus have their life and usefulness prolonged for years and incidentally save our hospitals hours and hours of time. Few cities in this

country have developed this idea to the extent New York has, and its success is chiefly due to the consistent efforts which Dr. Conner has made, not only to inaugurate this work but to see that his patients receive this necessary training. Those interested in carrying out this excellent idea in other cities would do well when they are in New York to look up the Sharon Work Shop, 84 Lexington Avenue, where this instruction is giyen.

Dr. John P. Davin, New York: We have a form of tenement house in New York that should be put out of commission, and that is the five story "walk-up." I am sorry that that tenement house was put up under the auspices of the Tenement House Commission. It was put up with the intention of doing away with the evils of the old tenement house. But there is nothing more conducive to heart disease in children who have tonsil trouble, than living on the fifth floor of a New York apartment building.

Dr. B. A. Ledbetter, New Orleans: One of the most important points to bring out in regard to this question of heart disease is the fact that the medical profession as a whole knows so little about it. Of all the organs in our body the heart is less understood than any other. I can look back on an experience of twenty-five years in examining a great number of people for insurance companies, and finding loud murmurs. Guided by my textbooks I felt sure that a person with such loud murmurs would be dead in a few years, yet some of those people are just as well now as they were then. The most serious heart diseases are unaccompanied by murmurs. On the other hand, a great number of murmurs are absolutely harmless. So long as the muscle is good the heart will work all right. It depends on the reserve that heart has, and it is by that that you must judge the case. At the necropsy, the valves in a great many of the cases are absolutely perfect. Do not think that because a man has a heart murmur you must lay him up. At the same time, however, we must not forget that with all these cases of heart disease, even mitral insufficiency, which is the least harmful of all heart diseases, the death rate is double that of the ordinary run of people. So that even in the mild cases you have to watch the patient. In those cases, we must find out what that heart can do. Then let the patient go ahead and do these things. He is going to die of something else. The same thing applies to schoolchildren. Many children come to us with heart murmurs. We cannot tell the damage done to that heart by listening to the murmur. Study the child. Do not stop that child from playing simply because it has a heart murmur. That child will stop himself if there is any serious damage to the heart.

Dr. Lewis A. Conner, New York: I am entirely in sympathy with most of the sentiments of Dr. Ledbetter. We

have to be very careful in protecting people with heart disease, but we have to be just as careful to protect healthy people from the stigma of heart disease. Quite as much damage can be done in one direction as in the other, and success can come only from a better knowledge of the significance of heart murmurs. Only a very small percentage of them are really indicative of organic damage. I should like to emphasize the importance of the special heart dispensary classes in the management of heart patients who have had a breakdown and have been discharged from the hospital with their compensation more or less completely reestablished. It has been shown conclusively that such outpatient supervision can do much to prevent subsequent breakdowns and can save such patients from repeated visits to the hospital ward. But, while much can be done to save the already damaged heart from periods of decompensation, the great problem is that of the prevention of heart disease. There are three distinct types of damage: that due to rheumatic infection in early life, the syphilitic lesions of middle life and the degenerative types of trouble which are seen chiefly in the later years of life. The opportunities in this field of prevention are very great, indeed, if we can but get cooperation between the laboratory workers, the clinicians and the various public health organizations.

THE MALARIA AWAKENING OF THE SOUTH

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The average practicing physician or public health official is not generally supposed to be a man of affairs, dealing in stocks and bonds, conversant with market quotations and the various phases of modern business; nor is he closely identified with the agricultural development of the country in its larger aspects. The proper selection and rotation of crops and the relative values of improved breeds of domestic animals as determined by experience and the latest live stock standards are the study of the progressive farmer. The time and the thought of the physician and the health officer are occupied in protecting and conserving the health of those who are laying the foundations and building the superstructure of our economic wealth, and thus, while contributing indirectly in no small measure to the success of modern business and farming projects, they are not an integral part of either group of these workers. For this reason it may be that some of us have not fully realized the enormous agricultural and business growth that is taking place in the South at the present time. If so, reference to the crop reports for the Southern states, to increased land values and tax assessments, and to new business enterprises incorporated will bring speedy conviction as to the reality of this flood of business prosperity which has spread over the South from Virginia to Texas, and which can be permanently checked by only one thing—malaria.

What influence will this new development of Southern land and industries have on the old, old problem of malaria? Will it help in the ultimate solution of the problem or tend merely to enlarge and complicate it?

What relation will malaria bear to the continued growth of these industries on which the future prosperity of the South depends?

Lands have been cleared before and industries started, only to stagnate or suffer abandonment, after a hopeless struggle, to the malaria-carrying mosquito. It is hardly conceivable, however, that in this instance history can repeat itself on so large a scale. We who are interested in preventive medicine have learned something, and the business interests, studying every factor that enters into the cost of production, have learned much more. We have learned in a general way how to protect individuals and communities against malaria infections, while progressive business men have figured out exactly, in dollars and cents, the cost of this disease in impaired efficiency and decreased production among their employees.

Asst. Surg.-Gen. H. R. Carter has expressed the opinion that actual malaria control demonstrations and the education of the children in the public schools are the only educational measures now being employed which are of general practical value in impressing on the individual or community the importance of malaria control as a health measure. This opinion is probably correct. Individuals and groups are notoriously slow in applying to themselves the knowledge that has been gained of preventive medicine. But industrial organizations and business concerns, looking at the subject from an entirely different angle, have been quick to see the importance of protecting the health of their employees as a business proposition solely.

They have been told that malaria, through sickness and decreased efficiency, causes a greater economic loss to the malarious sections of the South than all the

other preventable diseases combined—approximately a billion dollars a year—and from study of their own payrolls and cost sheets, they have been convinced of the truth of this appalling statement. Now all they ask is, "What shall we do to prevent this constant drain on our labor efficiency, and what will it cost permanently to protect our plants and maintain their output at a normal figure?" "We want to operate in the South close to our raw materials, with its cheaper labor, surplus power and ideal working climate, but we cannot compete with similar plants in the North and continue to pay the malaria tax. We must have relief, else we stagnate or must move."

Those of us who are in a position to receive inquiries from industrial concerns regarding malaria protection have been impressed with their increasing numbers and definiteness, and their stronger insistence that relief from this burden be given to Southern industries. Chambers of commerce, railroads, industrial plants of all kinds, lumber mills and large plantations are demanding to know what method of malaria control is best suited to their location and surroundings, and which will offer them the surest protection at a reasonable cost.

This malaria awakening of Southern commercial interests from a purely business standpoint may not be prompted by what some would term the highest motives, but it is backed by shrewd business sense and offers the most immediate prospect of accomplishing malaria control on an extensive scale and permanent basis.

There are still many individuals, particularly among those who suffer most from the ravages of malaria, who cannot be seriously impressed with the importance of this disease in relation to their own and their neighbors' health. Perhaps a generation hence a widespread appeal may be made directly on a health basis with a reasonable assurance of awakening a responsive inter-

est, but for the present such methods are apparently wasted on the class that is most concerned.

Therefore it may be fairly questioned whether, from a standpoint of practical accomplishment, it would not be the wisest policy for health officials to convert their malaria control efforts into a purely business formula, thus:

Malaria is costing your community or plant, per year	$5,000
Malaria protection will cost you, per year	2,500
Net gain, per year	$2,500

Any progressive community or business concern can understand and will act on such a simple proposition.

If it be true, then, that a large part of the malaria problem of the South can and will be solved through agricultural development and the growth of industrial plants—both operated on strictly business principles—conserving the employees' health as a means to increased dividends, it may well be asked, what part the physician and the public health official should play in such a program. Undoubtedly a more active and important one than we have played in the past, or can hope to play by simply sermonizing on the health hazards of malaria to the general public. By familiarizing ourselves with the fundamentals of malaria control, by realizing their present limitations and, above all, by never losing sight of the fact that no community or business concern can long afford to pay more for malaria protection than it receives in return, we can insure the success of this program of malaria control based on commercial interest alone.

EXTENSION OF MALARIA CONTROL DEMONSTRATIONS

Following the successful malaria control operations of the U. S. Public Health Service in extracantonment zones during the war, and similar demonstrations conducted by the Arkansas State Board of Health, the U. S. Public Health Service and the International Health Board in certain Arkansas villages, this pro-

gram of malaria control demonstrations has been extended this year to more than a hundred selected communities in eleven Southern states. These operations are being conducted under the general direction of the health departments of the different states, the U. S. Public Health Service furnishing supervision and the International Health Board financial aid. Each community has been required to provide at least 50 per cent. of the actual cost of malaria control operations, exclusive of supervision, and many of them have promptly contributed the entire amount; where this has not been done, the state department of health and the International Health Board have provided the remainder.

The selection of these communities was made by the various state health officers within their respective states, following a malaria survey of each locality. Many communities that were surveyed were not selected, either because they were unsuited for the purpose in view, or not yet ready to undertake malaria control operations on a permanent basis. In each case selection was made on practical grounds, such as high malaria incidence, feasibility of mosquito control, moderate per capita cost of initial operations and maintenance, favorable local sentiment, and future support.

These demonstration sites have been scattered throughout the malarious sections of the South with the expectation that their influence will spread and be felt over the entire region.

The business interests are watching these operations with keen attention, and the practical results obtained there will be applied around thousands of industrial plants in the South just as rapidly as competent advice and direction can be secured by them. Thus there will be established throughout the South bases of malaria control operations from which similar work, though possibly employing different methods, will be extended into the rural districts as rapidly as agricultural

development and the cost of control operations will permit.

The practicing physician can enter into this program of malaria control with enthusiasm and the full assurance that he will share in the increased prosperity of the community to which he belongs. Some short-sighted physicians have felt that such antimalaria campaigns are conducted directly against them and their legitimate revenues, but this is a complete misconception of the facts. It may be that his collections will show an immediate decline; but ultimately the physician profits as his patients prosper, and whatever tends to increase their earning capacity will be reflected in the greater size and more prompt payment of his bills. The medical care of an impoverished community is always a work of charity, but the same community when freed from its malaria burden can well afford to pay for a more generous medical service than it has ever known.

The physician can aid in this program by the exercise of greater care in the diagnosis of malaria cases. It is notorious that the diagnosis of malaria in malarious regions is not made with the same precision that is expected in other diseases. Perhaps there are many reasons for this laxity, this anomaly as applied to malaria diagnoses—custom, convenience and popularity all point the way to a diagnosis of malaria in most febrile cases occurring in malarial regions. And when it is considered that in communities where malaria is prevalent, malaria must always be excluded, and that quinin dosage is the time-honored method employed for this purpose, it can readily be understood how the attending physician is practically forced into making a tentative diagnosis of malaria, which, although incorrect, need never be brought into question. It seems hardly fair to criticize the general practitioner too severely in this matter; but he certainly should employ all modern methods in establishing a diagnosis in

doubtful cases and perhaps should display more readiness to correct one not justified by the course of the disease or its failure to respond to quinin medication. The physician who is unwilling to do these things is not fair to himself, to his patient, or to the community in which he lives.

The physician can aid in this program by exercising more care in the reporting of malaria cases to the proper health authorities. From a public health standpoint the reporting of all malaria cases is not so important, perhaps, as the reporting of typhoid and the eruptive febrile diseases, because malaria is an endemic disease and because we are at present powerless to control the movements of the most dangerous malaria carrier. If, however, we are entering on an extensive malaria control campaign throughout the South, as we believe to be the case, it is necessary that we know the extent of the malaria problem in different localities in order that there may be no wasted effort and that a proper measure of results obtained may be secured. In no Southern state, except Mississippi, is malaria at present reported with sufficient exactness to enable us to do more than estimate these figures.

Perhaps the greatest assistance which the physician can give to this program of malaria control is in the adequate treatment of patients coming under his care. It has been found that the quantity of quinin necessary to control active malaria symptoms, and the duration of treatment usually given such cases, are entirely inadequate to prevent the development of sexually mature malaria organisms in the patient, and future relapses of the disease. Untreated and imperfectly cured patients usually become malaria carriers, the reservoir from which all future infections spring.

STANDARD TREATMENT FOR MALARIA

Following extensive investigations of Dr. C. C. Bass in the treatment of malaria in Bolivar and Sunflower

counties, Mississippi, the National Malaria Committee has formulated a standard treatment for malaria:

For the acute attack, 10 grains of quinin sulphate by mouth three times a day for a period of at least three or four days, to be followed by 10 grains every night before retiring for a period of eight weeks. For infected persons not having acute symptoms at the time, only the eight weeks' treatment is required.

The proportionate doses for children are: Under 1 year, one-half grain; 1 year, 1 grain; 2 years, 2 grains; 3 and 4 years, 3 grains; 5, 6 and 7 years, 4 grains; 8, 9 and 10 years, 6 grains; 11, 12, 13 and 14 years, 8 grains; 15 years or older, 10 grains.

The committee does not claim that this is a perfect treatment, or even the best under all circumstances, but it does believe that in the great majority of cases this treatment will prevent relapses and the development of malaria carriers.

This standard treatment should be approved by the American Medical Association and by every state and county medical society in the South, and every practicing physician should follow it as nearly as practicable, using all means in his power to impress on his patients the importance of thorough continued treatment after the disappearance of active malaria symptoms.

DUTIES OF THE HEALTH OFFICER

What should the public health officer do to further malaria control measures undertaken by commercial interests? He should stand ready at all times to furnish competent advice concerning the extent of the malaria problem under consideration—the feasibility of its control—and the method or methods best suited for this purpose. These efforts at malaria control, although financed by private business concerns, will result in general public good; therefore they are entitled to receive from the public health officer such support as may be needed to insure their success. Not only this, but some protection should be afforded them from surrounding communities that are unwilling to finance malaria control operations for their own benefit.

The health officers of the Southern states should undertake to secure such legislation as may be necessary to prevent the increase of malaria, resulting from agricultural and industrial development—"man-made malaria," as Dr. Carter calls it—particularly in relation to (1) drainage projects, (2) highways construction, (3) new construction of railroads, and (4) impounded waters. The state health officer should be given proper legal authority to advise in the planning of these new projects so far as they may affect malaria prevalence. And where such undertakings will greatly increase the prevalence of malaria, the health authorities should have the power to prevent their construction.

The state and local health authorities should use every effort to secure the enactment and enforcement of an ordinance directed against the propagation of mosquitoes in those cities and incorporated towns that lie within the malarious districts of the state. The enforcement of such an ordinance in communities adjacent to those industrial plants which have already undertaken malaria control will add strength and completeness to their work.

In every state in which malaria is a serious sanitary problem, there should be created in the state health department a malaria division for the compilation of malaria statistics and the direction of malaria-control measures. Too many vague estimates of malaria losses and too few accurate figures have been given to the public in the past. Among its other duties, the malaria division should collect and distribute correct information concerning the yearly losses due to malaria for each county in the state. One of the prime duties of the state health department should be to secure the reporting of malaria cases as successfully as has been accomplished with other communicable diseases. The difficulties in accomplishing this end are appreciated; but if report blanks are prepared in the simplest form in the beginning, it can be done.

This program of malaria control, through the awakening of business interests, does not require an extensive educational campaign in order to insure its success: the results accomplished around each industrial plant will speak for themselves. But the public should be kept informed through the local press of the progress being made and the results obtained in each operation.

One would hardly dare to prophesy the extent to which this movement for malaria protection to Southern industries will affect the malaria problem of the South as a whole; but with thousands of industrial concerns and the communities surrounding them (representing one fourth of the population of the South) under proper malaria control, it is not too much to hope that the direct effect will be appreciable, and that indirectly it may lead to the removal of this handicap to Southern prosperity from all except the most remote settlements.

ABSTRACT OF DISCUSSION

Dr. Graham E. Henson, Jacksonville, Fla.: Considering malaria as a national health problem, we might ask ourselves why the disease is endemic in all areas of the world having a suitable topography for the mosquito. For several hundred years we have been in possession of a specific that will not only control and cure the disease, but will even prevent the formation of the sexual forms in the human host. We know that after the sporozoites are introduced into the human host by the mosquito, asexual reproduction goes on for a more or less indefinite time, depending on the resistance of the patient, treatment and other factors. We know that if we properly attack the parasite in the human host at any time during this period, the sexual forms will never form in the human host, for while evolution goes on and the merozoites, the product of succeeding sporulations, multiply with each succeeding sporulation, the sexual forms will never develop if the specific is properly applied in proper dosage for a sufficient time. The answer to my question is that we are not properly applying the specific. This should not in any way interfere with the eradication of the mosquito where it is feasible to control and eradicate this insect. But our work should be more confined to the treatment of the infections in their incipiency in the human host, especially in those areas where it is not possible to eradicate or control the mosquito.

Dr. A. C. Chace, Texarkana, Ark.: The St. Louis Southwestern Railway was one of the first industrial concerns to take up the control of malaria as an economic problem. The cost of having malaria was greater than the cost of undertaking the control of the disease. We have a centrally located hospital, and we have determined that there has been a reduction of about 70 per cent. in malaria cases treated in that hospital. In the towns through which this railroad goes, from St. Louis down to Texas, interest was stimulated among the merchants and others and in that way we contributed to the welfare of our communities as well as to the welfare of the industries concerned. What was the cost of getting rid of malaria? We determined that approximately 30 cents per capita, under some conditions, will get rid of malaria. That expenditure will not get rid of the mosquitoes, but it will reduce the anopheles to such an extent that malaria will not become an economic problem. This work is done in the three way mentioned by Dr. Fricks: by drainage, by quinin and by eliminating the carrier. We have a standardized treatment very similar to that which Dr. Fricks has given, except that we use another salt which is more soluble, and we mix with the quinin some powdered ginger root to increase absorption. The result has been that these cases have been almost negligible among our employees since this plan has been put in operation.

Dr. C. C. Bass, New Orleans: I wish to endorse and emphasize one particular phase of Dr. Fricks' paper. Numerous demonstrations have been made throughout the world, and recently a great many have been made throughout the United States, showing that it is possible, and it is economical, to control malaria by mosquito control. These demonstrations, however, have been in comparatively limited areas, and have usually been in towns and villages. Most of the malaria in this country is in the rural districts; as a matter of fact, the malaria problem is largely a rural and not an urban problem. Whether it will be practical to employ the same methods of mosquito control, and thereby control malaria in rural sections, remains to be demonstrated. However, if such a plan is feasible and successful, in all probability it will be many years before a great deal of territory can be covered, and before the big malaria problem can be affected very greatly. Enormous sums of money must be expended. It is not necessary to wait until we work out and develop machinery by which we can control mosquitoes and thereby control malaria in this rural part of the country; it is possible to control it by disinfecting the malaria carrier by the standard treatment Dr. Fricks mentioned. In the particular locality with which I am most familiar it has been found that approximately from 20 to 25 per cent. of the malaria is treated by the physicians in the locality. If these physicians would cure or disinfect their patients, from 20 to 25 per cent. of the malaria would be

controlled at once. The National Malaria Committee has endorsed a standard method of treatment which they hope the physicians of the South will adopt. There is considerable evidence that this standard treatment is being adopted rapidly and usually with great satisfaction. If I read the signs of the times aright, the near future holds out the promise of a considerable decline in the prevalence of malaria over this whole country, regardless of any antimosquito or sanitary measures that we may carry out. The standard method of treatment is not necessarily the best method of treatment, and it is surely not the only method that may disinfect the patient, but it is a method that will disinfect the patient with reasonable certainty, which is more than can be said for the treatment employed by many physicians at the present time. One idea that was suggested is, I think, slightly erroneous. It is with reference to the value of the history of attacks in finding the malaria carriers in a community. Our experience in comparing the blood findings with the history in 31,459 persons examined showed that only 55 per cent. of those whose blood contained parasites gave positive histories. Forty-five per cent. of those whose blood contained parasites gave negative histories as to attacks during the previous twelve months. I believe, however, that in the absence of facilities for this examination, history is useful, and it will find the majority of the infected persons, but it falls very far short of finding all.

Dr. W. S. Leathers, University, Miss.: Malaria in our state constitutes a considerable public health problem. I have watched with a great deal of interest the various demonstrations which have been made and are being made in the control of malaria by the International Health Board and the U. S. Public Health Service I feel certain that no one questions that malaria cannot be controlled by the extermination of the mosquito, or by the sterilization of the blood of one who is infected with malaria. I think it is conceded that we have ample information for use in the control and ultimate suppression of this disease. The foremost question at this time is: What is the most economical plan that can be used in the control of malaria from the standpoint of a county or state? The conditions which face the public health official in dealing with this disease in a public health way in a town or city and in the country are manifestly different. It is often not possible to emphasize one method in fighting malaria exclusive of other methods. For instance, it may be advisable to use all methods in a city, especially the extermination of the mosquito, while, on the other hand, there are certain rural districts where it may be advisable to emphasize the sterilization of the blood of infected persons. In advising the people of the county or state relative to the control of this disease, I am coming more and more to the point of view that we must adopt a broad program. We must not lose sight of the fact

that advocating drainage is of tremendous importance not only in the control of malaria, but also in the agricultural development of the state. It would also seem advisable to emphasize constantly the importance of screening the homes for the reason that it not only serves to check the spread of malaria, but it will be of much value in the control of typhoid and other diseases of this group. In a word, these things make for comfort as well as the control of disease, and thesefore we cannot afford to minimize the importance of drainage and screening. So that it appears to me that we are forced to this conclusion: that if malaria is to be eradicated in a county, the area should first be studied carefully, a survey made, the problem analyzed in a practical way and then a plan worked out which will as nearly as possible get the variations of population and local conditions essential to the control and suppression of this disease. This will be a means of attacking the disease from every possible angle, which is necessary in dealing with this difficult problem. A great deal may be done in controlling malaria by intensive educational methods. This has not been done to the extent necessary. The people are not acquainted, generally speaking, with some of the simple facts relative to this disease or at least their acquaintance with such facts is not of such a character as to cause them to act or to apply the principles involved. The people are receptive at this time and if such information is presented to them properly, I believe that far-reaching effects will be achieved. The use of quinin in the sterilization of infected people is certainly a most valuable method. In many rural districts it is the only method that can be applied with economy. It is very necessary, however, to supply quinin to the people at cost, by having quinin stations, because in this way they are more likely to buy it and this will also probably contribute to its use. To this end, the county may be placarded and other methods used to impress the people with the importance of taking quinin in the right way when they contract this disease. Extensive demonstrations in the control of malaria have been conducted under the auspices of the Mississippi State Board of Health in Bolivar and Sunflower counties. This work has been under the scientific direction of Dr. C. C. Bass and the final report relative to the plan of operation and the results obtained will be most helpful in future public health work in the control of malaria.

Dr. J. W. Schereschewsky, Washington, D. D.: There is one thing to remember about the quinin control of malaria, and that is the question of the limit of the supply of quinin. I doubt very much that it would be possible to apply it as the only measure, for the simple reason that I do not believe there is enough quinin to do it. The supply of quinin—quinin being a natural product—is strictly limited. Of course, it is quite possible that a substitute for quinin may be discov-

ered. And it is highly desirable, if intensive campaigns are to be carried on, that we have a substitute for quinin. There are some features about quinin which could be improved. Then we find, as Dr. Leathers pointed out, that drainage operations, by removing malaria, will not only result in a betterment, an improvement in the health of the people, but it will add much to the material prosperity of the country by the addition of these drained lands. For instance, in certain rural sections where the chief sources of malaria are swamps, it is evident that by the drainage of those swamps we will add some extremely fertile land to the tillable land of the country, because all swamps are alluvial land, and the placing of this rich virgin land under cultivation will add to the resources of the country.

Dr. John A. Ferrell, New York: Dr. Fricks has indicated that the demonstrations of malaria control are being conducted in selected towns in practically all of the Southern states. I have the estimates of the cost of this work for six of the states. Thirty-five towns are included, having an aggregate population of 155,500. The estimated average per capita cost for antimosquito measures is $1.05. Of this amount the towns have contributed 63 cents; the states, 18 cents; and the International Health Board, 24 cents. Cooperative budgets for the selected towns in the other states have not yet been adopted, but the cost in them will not, I think, vary greatly from the figures quoted.

Dr. John P. Davin, New York: Last year when Dr. Guiteras, the national health officer of the Republic of Cuba, discussed this subject, he gave it as his opinion that the control of malaria in Cuba had been solved, as far as he could solve it, by the distribution of quinin to the exclusion of drainage and other methods. That was the only practical method they could employ. Dr. Guiteras seemed to be perfectly satisfied with that measure for the eradication of malaria, independent of measures employed for other purposes. It seems to me that the solution of the problem lies in the rational prescribing of quinin by physicians under the conditions laid down by the National Malaria Committee. As to the question of cost: the average individual today ought to be well able to pay the cost of a course of quinin treatment, for people are earning money in amounts that they never got before. The solution of the whole problem rests on the intelligent understanding of this question by the ordinary physician. Dr. Guiteras gave it as his opinion that the problem was practically solved in Cuba by the distribution of quinin to those who could not buy it themselves.

Dr. Lunsford D. Fricks, Memphis, Tenn.: The point I was attempting to bring out was that here is a method that is available. The business interests of the South are willing to undertake this control work themselves, and all that is necessary for the health authorities and the people who are

interested to do is to give it support, and in that way we will certainly accomplish a great amount of good. The men who have given the problem of malaria control much thought are well aware that it is not a simple proposition. So many factors are connected with it, and there are so many ramifications that it is an extremely difficult proposition to effect complete malaria control over the entire South. There is no use saying that it is simple; that it is an easy thing to accomplish, because it is not. And for that reason it seems to me highly advisable, in fact, necessary, that we, as health officials, and as men interested in the health of the South, should take advantage of every possible means, particularly those that are practically self-supporting, such as extensive industrial interests, in enabling us to carry on this malaria control campaign. I certainly had no idea of suggesting that the state officials, who have the responsibility for the health of their states on their shoulders, should exclude any other method, such as a campaign of education, or whatever it might be. But I do believe that they should give considerable thought to the best means by which they can support the demand of the industries of the South for malaria protection and the control of malaria mosquitoes. And I am sure that from those areas in which we have shown that malaria and the mosquito can be controlled, there will spread out all over the South a wider general sentiment for malaria control.

TRACHOMA

A PUBLIC HEALTH PROBLEM OF THE STATES

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Trachoma is an inflammation of the conjunctiva which originates in infection from a trachomatous to a nontrachomatous eye, through the medium of the secretion, lasting, without interference, months and years, causing serious and permanent impairment of vision, and resulting too often in total blindness from its cicatricial and mutilating effects.

The condition is more or less a hypertrophy of the conjunctiva, plus the trachoma follicles or granules, and is described by some authors as "papillary trachoma" and "follicular trachoma," according to whether the hypertrophy or the follicles or granules predominate. When the follicles can be seen in the much hypertrophied and inflamed tissue, it is at times referred to as "mixed trachoma," while the terminal stage is classed as "cicatricial trachoma." The disease occurs under varying clinical aspects, which has caused some observers to describe several varieties of trachoma. It would seem, however, that these are merely various stages of trachoma, rather than varieties.

It is realized that some cases respond more readily to treatment than do others, as is the case in many diseases; then again, the subjective symptoms in one patient may be comparatively mild and, even though the trachoma has existed for years, there will be but

little discomfort or corneal damage. In fact, a case is occasionally seen in which the disease has been of long standing and reached the cured or cicatricial stage with practically no damage to the cornea. This is probably the reason why one observer [1] describes trachoma clinically in two forms: fulminating and slow trachoma.

DIAGNOSIS

Like smallpox and some other communicable diseases of which the etiology is unknown, the diagnosis is a matter of personal opinion, based on the character and amount of experience which the observer may have enjoyed with respect to the disease.

According to my observation, decidedly more errors are made in diagnosing cases as trachoma which should be classed as benign conjunctivitis. This was evident during the World War, when many men were rejected for service as having trachoma who probably suffered from no communicable eye disease whatever. One instance in particular was noted in a Western state where about sixty drafted men were examined in one day by the medical board, and 25 per cent. of them were rejected as having trachoma. I examined these men at the request of the chairman of the board and found them quite free from any affliction of the eyelids which would bar them from service. The same thing is continually seen when a routine examination of schoolchildren has been made.

Reports are frequently received from communities that medical examination of the schools showed many hundreds of cases of trachoma. At times the schools had been closed because of a supposed epidemic of trachoma. Subsequent investigations showed that the great majority of the cases were only benign conditions.

On the other hand, there are apparently a few specialists who are loath to admit that trachoma exists

1. Foster: Clinical Course and Diagnosis of Trachoma.

unless the conjunctiva shows cicatricial tissue and possibly other sequels of the disease. This failure to recognize early the nature of the disease, and apply the appropriate remedy which is demanded by the truly serious condition, not only dooms the individual patient to unnecessarily prolonged suffering and the mutilating effects of trachoma with the resultant impairment of vision and frequently total blindness, but constantly subjects his family and associates to a dangerous communicable disease.

In order to be able to determine intelligently whether trachoma is or is not present in any given case, it is essential that the entire conjunctival surface be inspected, particularly in the upper lid and culdesac. It is therefore imperative that the examiner be able to evert the lids correctly and expose these parts. This may at first thought seem to be a small matter; but to evert properly the upper lid, so as to expose and examine all portions of the culdesac, is rather an art that requires no little practice. It is possible to evert the upper lids quickly and effectively without discomfort to the patient. A knowledge of the appearance of the normal conjunctiva, as well as diseased conditions, of course, is essential in diagnosing trachoma.

The small glove buttoner with a wire loop makes an excellent instrument for everting the lids. To examine the upper lid, the patient is requested to look downward with the head well back. The lashes of the upper lid are held between the thumb and forefinger of the left hand, and the lid is drawn gently downward and outward, while the wire loop of the glove buttoner is held with the right hand and placed well up on the skin of the eyelid, and the lid everted over the instrument. By properly manipulating the point of the instrument, one may inspect all portions of the culdesac under varying degrees of pressure.

Trachoma usually commences with an irritation and inflammatory symptoms. Soon there are photophobia, pain, and more or less watery secretion. In the

beginning it is often difficult or impossible to differentiate it from a simple catarrhal conjunctivitis. The latter, however, with the use of simple remedies, will clear up rather easily. On the other hand, there will be no appreciable effect on the trachoma, and the thickening of the conjunctiva will gradually take place with obliteration of the continuity of the vessels and the appearance of the granulations. The patient complains of sensitiveness to light, lacrimation, more or less pain, disturbance of vision and sticking together of the lids in the early morning. The palpebral fissure is narrower than normal, and there is a frowning expression or wrinkling of the skin of the forehead, due to photophobia. The upper lid often droops, and the distance between the cilia and fold of the skin of the upper lid is more marked. Secretion is noted, especially at the internal canthus, and a granular appearance is observed at the inner angle of the eye, the color of which is darker than normal. These conditions cause a suspicion of trachoma even when viewed at a distance. When the lid is everted, the conjunctiva over the tarsus and in the culdesac is red and thickened, and the surface is uneven and readily bleeds. The blood vessels of the conjunctiva are more or less obscured, and it is not possible to trace them uninterruptedly from the ciliary border to the culdesac, which would be possible in the absence of hypertrophy. The appearance of the blood vessels is considered very important, as this indicates the degree of conjunctival hypertrophy, a very essential feature in trachoma. The conjunctiva may appear velvety, or even raspberry-like in appearance, or it may present the gray, translucent, roundish granules in accordance with whether the papillary or granular form predominates. The former is always more pronounced on the upper lid, while the latter is principally in the retrotarsal folds.

The course of trachoma, when unmolested, is a gradual increase of hypertrophy of the conjunctiva, which varies in different cases. Finally, the hyper-

trophy gradually disappears and is replaced by a slowly forming cicatricial state. This is usually, however, when not given proper treatment, a question of years—and the intervening years mean untold misery to the unfortunate victim while the sequels develop and his vision grows less and less, and too often he is blinded and compelled to pass the remainder of his days in total darkness.

With the cicatricial stage, the trachoma is cured in that the specific morbid process has come to an end; but the entropion, trichiasis, pannus and xerophthalmus too often remain as sequels to harass the blind and to add to their misery.

Even total blindness is not the worst result to be feared in trachoma. When the disease attacks little children, they are, untreated, too often the victims of a life of untold misery. With the pannus, corneal ulcer and photophobia, they pass their dismal days, endeavoring to shield their eyes from light. So constant and excruciating is the pain in many cases that this one thought and aim occupies them to the exclusion of all else in life. The child therefore finally reaches adult life, wrecked mentally and physically, veritably a human derelict—so dwarfed in mind and warped in body that were it humanly possible at this late day to give him good sight, he would find it impossible to take his rightful place in society.

In many cases the disease remains dormant for indefinite periods, and is found only in routine examinations of schools, etc. Either these cases develop insidiously, or the original acute onset has been forgotten. They are often dormant until some irritant causes an exacerbation.

When schools, institutions, etc., are examined in a routine manner, cases of trachoma are found among people who are apparently surprised that any abnormal condition exists. On close questioning, however, some of them will remember having had an inflammation of their eyes at some previous period. Others will insist

that they have never experienced any trouble with their eyes. According to Fuchs, these cases belong to the granular form of trachoma; and examination shows, in the retrotarsal folds, a considerable development of trachoma granules. Fuchs says, in connection with these dormant cases: "This was eminently the case in New York when systematic inspection of the public schools for eye disease was first taken up; and, because so many of these latent cases were unearthed, the idea got abroad that there was an alarming increase—a veritable epidemic—of trachoma, in the city. The truth is that there were no more cases than before, only more were discovered." The importance of a rigid, routine and thorough examination of schools is therefore emphasized.

The patients often deny any subjective symptoms until the pannus has developed sufficiently to interfere with the sight. At a recent field clinic, a girl, aged about 19, insisted that she did not know there was any trouble with her eyes until told so in a routine school examination, although there was a very marked hypertrophy of the conjunctiva, granulations, and a distinct pannus in the right eye.

When we consider that the diagnostic signs of a comparatively recent case of trachoma are the trachoma follicles and hypertrophy of the conjunctiva (neither of which occurs in those diseases with which it is confounded), there should be, theoretically at least, no trouble about making a diagnosis.

DIFFERENTIAL DIAGNOSIS

Practically, however, we realize that there are cases in which follicular conjunctivitis and trachoma are at times difficult or impossible to differentate. When it is not possible to do so, or when there is division of opinion of observers of equal experience and opportunity for observing and treating trachoma under the various conditions, then it must be admitted that the

case is at least suspicious; and suspicious cases are to be treated in public health work as positive until the doubt has been removed.

On this point Fuchs says:

> If a physician in any case is doubtful whether he is dealing with trachoma or follicular catarrh—a distinction which often cannot be made in the first examination, especially in cases of acute onset—he must denote the case as suspected trachoma, and must take the steps necessary to avoid the spread of the disease, and must begin the treatment.

The potentialities of trachoma are far too great to take chances on infecting the healthy while the discussion continues as to whether the case is one of trachoma or follicular conjunctivitis. When an abnormal and curable condition exists, it should be cured.

In the opinion of one of the leading ophthalmologists of this country, children with decided folliculosis, sometimes called "school folliculosis," should be kept from school until the condition is cured; this is best treated surgically. Withholding proper surgical treatment and temporizing with the various astringent lotions in order to observe the course of the disease is unjustified and unfair alike to the patient and to his associates.

Follicular conjunctivitis is characterized by follicles, superficially placed, that appear to be on the conjunctiva rather than in the conjunctiva. There is no hypertrophy of the conjunctiva, and the course of the blood vessels can be traced from the ciliary border to the culdesac. De Schweinitz says:

> The follicles are benign; they are smaller, by more than one half, than the follicles of trachoma; they are in large measure confined to the fornices; they are never seen on the plica or the bulba conjunctiva. . . . If the follicles are irregularly present and not disposed in typical parallel rows, and especially if they are deeply set, and beginning induration of the tarsus is evident, the presence of trachoma becomes more than a suspicion. Moreover, even in its very earliest steps, as has been recently pointed out by Stieven and Van Kirk, in their "Search for Trachoma Among Mill Workers," loupe investigation of the upper portion of the cornea will not infrequently detect a very delicate ingrowth

of vessels, the first beginning of a pannus, not discoverable by the naked eye examination. This sign is an important one, and is not present if the follicles are benign.

Cases of vernal catarrh usually can be diagnosed by the peculiar pavement-like appearance and the subjective symptoms, more pronounced during the first warm days of spring. When the upper lid is everted, there is seen across the surface an appearance as though a thin layer of milk had been spread. Parinaud's conjunctivitis is an acute disease accompanied by fever and glandular enlargement, and usually occurs in one eye. Tubercular conditions of the eyelid simulating trachoma are comparatively rare.

PREVENTION AND CONTROL

Trachoma is a reportable disease in many states. Surveys in numbers of states have been made by the Public Health Service, and trachoma has been found to be prevalent in many. A number of states have taken up the trachoma problem and appropriated money to combat the disease. The health officer of a state where trachoma is prevalent says:

> Trachoma presents a problem more largely economic than any other in the whole field of preventive medicine. No one dies with this disease. Many of those who have it are eventually made blind. The economic usefulness of every patient is greatly decreased. It would be conservative to say that the average earning capacity of persons having trachoma is less than one fourth of the average earning capacity of well individuals. It is slowly but surely contagious and spreads through families, schools, institutions and communities when an initial case is introduced.

Some years ago we began to realize that trachoma was not purely an exotic disease, and that it was a public health problem to be dealt with in the states. In cooperation with the several states, therefore, free trachoma hospitals have been established in Kentucky, Virginia, West Virginia, Tennessee and North Dakota. An eye specialist is in charge, and a corps of trained nurses are on duty in each of these hospitals. In addition to these hospitals, field clinics have been

conducted in these and a number of other states. The results have been exceedingly satisfactory.

Adults who for years have been burdens to themselves and their friends, and often charges on the county, have been cured and enabled to earn a livelihood for themselves and family. Children who have been compelled to remain out of school on account of the constant pain and failing vision have been permitted to resume their studies without further interruption. Patients have come many hundreds of miles seeking relief, and the capacity of the small government hospitals has been taxed to accommodate these sufferers.

About 9,000 cases of trachoma have been treated at these hospitals, the ages of the patients varying from infancy to old age. About 50 per cent. of all patients had impaired vision from trachoma; 1 per cent. were blinded in both eyes; 3 per cent. blinded in one eye, or 4 per cent. of the patients had suffered the loss of either one or both eyes as the result of trachoma; 10 per cent. showed active ulcers of the cornea; 35 per cent. had pannus; 10 per cent. had entropion; 7 per cent. trichiasis, and 50 per cent. had photophobia, and about 25 per cent. had corneal opacity.

It is impossible to know anything like the exact number of cures that have been effected, because many of the patients live long distances from the hospitals and in isolated neighborhoods, and, once relieved of their subjective symptoms, they do not return for final inspection, so that the hospital cards fail to show what result has been obtained. A case is recorded "cured" only when the ophthalmologist in charge has examined the lids and found them entirely free from trachoma.

The number of hospital cases does not include the field clinics that are being conducted in various states. Eighteen field clinics have been held during the last seven months; 825 operations were performed, 559 under general, and 266 under local anesthesia.

CASES OF WHICH A COMPLETE RECORD HAS BEEN POSSIBLE*

	Duration								Sequels									Time to Cure					
Ages	0-1 Month	1-6 Months	6-12 Months	1-2 Years	2-5 Years	5-10 Years	10 Years Up	Total Cases	Pannus	Corneal opacity	Ulcer	Entropion	Trichiasis	Impaired Vision	Photophobia	Blind One Eye	Blind Both Eyes	1-4 Weeks	1-2 Months	2-5 Months	5-12 Months	1-2 Years	Total Cures
0- 5	1	7	8	6	4	...	...	26	2	2	..	...	...	9	2	1	..	5	11	9	1	0	26
5-10	6	33	36	24	24	11	...	134	25	3	5	6	...	70	29	1	1	14	44	55	13	8	134
10-20	2	37	47	71	80	58	54	349	138	86	43	46	24	242	141	31	1	36	89	147	54	23	349
20-30	6	12	1	16	23	23	21	102	57	37	17	27	15	100	60	10	4	11	35	21	19	16	102
30-50	7	8	3	7	21	16	30	92	48	33	20	27	17	98	56	10	2	7	21	36	17	11	92
50 up	2	6	1	8	17	16	21	71	39	30	13	23	10	71	41	5	7	11	21	20	11	8	71
All ages	24	103	96	132	169	124	126	774	309	191	98	129	66	585	329	58	15	84	221	288	115	66	774

* Prepared by Dr. R. W. Raynor, medical officer in charge of the Pikeville, Ky., Trachoma Hospital.

TREATMENT

Treatment of trachoma is surgical. Nothing particularly new is claimed in the treatment of trachoma, but it is believed that the grattage method has been so systematized that each case is carefully studied, so that the operation best suited to the individual case may be done, or a "selective" grattage performed.

The amount of traumatism necessary in one case may be inexcusable in another. The object is to remove the abnormal tissue, but to stop as soon as this has been accomplished. In the average case this can be judged principally by the reappearance of the blood vessels of the conjunctiva. Some experience, however, is required to know just when to stop.

The operation as performed in the Public Health Service trachoma prevention work is as follows: The eyelid is everted and held in position by special forceps that at once hold the lid firmly and afford a supporting surface for the eyelid which is to be operated on. With two dull scalpels, one in each hand, the operator gradually raises the conjunctiva until the entire culdesac is exposed, an assistant holding the forceps in position. In marked cases, superficial scarification of the surface is done from below upward, and then brushed with a mercuric chlorid solution, 1:2,000. This is followed by using small sponges of fine mesh gauze, wrung out of the 1:2,000 mercuric chlorid solution. This is applied with the finger in smoothing the conjunctiva, and is continued until the vessels are seen clearly when pressure is relaxed on the forceps. Care should be exercised to reach all parts, for it is essential that the hypertrophy and granules be thoroughly removed. This is facilitated by manipulating the forceps and pulling forward the conjunctiva and holding it while the culdesac is smoothed out. After the forceps are removed there remains to be gone over the small place at the edge of the eyelid where the teeth have held. This is accomplished by the use of Demarres forceps. After the operation, the eyelids are everted and thoroughly

cleansed of all blood clots by washing with boric acid solution, after which 2 drops of a 20 per cent. solution of argyrol is put in each eye. When this operation has been properly done, there is usually but little reaction, and it is seldom necessary to make cold applications. The eyes should not be bandaged. Some of the milder cases of the disease will require only the application of the gauze. The after-treatment consists in washing out the eyes every three hours with boric acid solution, followed by 20 per cent. solution of argyrol. During the twenty-four to forty-eight hours immediately following the operation, the eyes should be examined carefully by the surgeon or a competent assistant for any adhesions and, if found, these should be broken up. At the expiration of about one week, when the slough has come away, if there are rough surfaces left, they should be brushed lightly with a 2 per cent. solution of silver nitrate and repeated if necessary.

In the old long standing or deeply seated cases, one operation may not suffice to effect a cure. In this event, the operation should be repeated as soon as it is determined that it is necessary.

With the smoothing off of the lids the pannus will gradually disappear and the corneal ulcers heal. Deep ulcers should, of course, receive appropriate treatment, but should not be bandaged.

In those cases in which the palpebral fissure is too limited, a canthoplasty should be done. In the old cicatrical cases in which entropion and trichiasis are present, appropriate surgical methods are to be resorted to. When these conditions are very marked and the eyelashes are directly on the eyeball, the patients suffer greatly at times. These patients are marvelously benefited by an effective entropion operation.

When the infection appears to be in the tarsal plate and recurrences of the trouble take place, the plate should be removed. This usually gives excellent results.

THE DIFFERENTIAL DIAGNOSIS OF CONJUNCTIVAL FOLLICULOSIS AND TRACHOMA

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The old controversy over the differential diagnosis of conjunctival folliculosis and trachoma must once more be haled before the assembled intellect of a great profession. The excuse for its precipitation at this time is a good one, for the issue has erupted in a territory where the character of the population is such as to lend material aid to its proper settlement, there being practically no foreign element to becloud the condition. It goes without saying that a correct solution of the problem is of transcendent importance to the welfare of hundreds of thousands of children, and therefore of the entire people of the affected area.

The Mississippi and Ohio valley states and the region south of Mason and Dixon's line appear to be the scene of a more or less active trachoma campaign. So far as one can determine from a survey of the literature and professional activities of the last ten years or so, it would appear that the U. S. Public Health Service is very kindly furnishing the fuel for this campaign by discovering considerable numbers of trachomatous children in various schools in various localities throughout this area, where it is asked that a survey be made.

I must request that it be clearly understood that in this paper I am not discussing conditions in the mountains of Kentucky and East Tennessee, or in certain Indian reservations, or in certain small communities

where foreigners predominate. We all know, of course, that real malignant trachoma is epidemic, even endemic in these places. Leaving these out of the discussion, I have reference, then, to all the rest of the great area just outlined, comprising all of the Southern and many of the Middle Western states, where the population for the most part is native-born American, and where society is in a state of enlightened civilization. I can speak with first-hand knowledge only of the situation in South Carolina, but I am reliably informed that similar conditions have recently existed or now exist in many other states and localities in this great area.

Briefly stated, the facts as to the discovery and management of alleged trachoma in South Carolina are as follows:

Two representatives of the U. S. Public Health Service, who were designated as trachoma experts, were requested by the state board of health to make a survey of the schools of Newberry. They reported sixty-six cases of positive trachoma out of approximately 1,000 children examined, and these were distributed among fifty-five different families. One adult, about 30 years of age, was alleged by the same investigators to have trachoma and was operated on by them. So far as can be determined, there are not now and never have been any other adult cases of trachoma even suspected in Newberry. I saw forty of these alleged trachomatous children and the one adult, and in my opinion none of them had trachoma. Some of these children, and others under precisely similar conditions in other parts of the state, have been seen by various ophthalmologists in South Carolina, in Atlanta and in Augusta. So far as I am informed, all but three of these ophthalmologists—one in Atlanta and two in Columbia—are of the opinion that these are not cases of trachoma; and these three ophthalmologists have all, I am told, in recent years been diagnosing similar

cases and operating on these patients for trachoma. Other men and I have shown that similar conditions exist in various other parts of the state, and indeed will be found among children everywhere in slightly varying proportion.

Unfortunately, boards of health are as a rule confessedly unfamiliar with problems of this nature, and the South Carolina board was no exception. It accepted the recommendations of the Public Health Service representatives as ex cathedra, and excluded the condemned children from the schools, refusing to readmit them until they had submitted to operation, after which they were permitted to return to their classes within a few days—a course which might well be characterized as the acme of the *reductio ad absurdum* if the cases were really instances of malignant trachoma.

The serious aspect of the affair is this: If, as may be readily anticipated, this policy is to be continued throughout the state, about 20,000 schoolchildren in South Carolina will be stigmatized as having a disease, notoriously of uncleanliness, and will be practically compelled to submit to an operation that alone could not possibly cure them if they have malignant trachoma, and which if they have not trachoma is obviously useless and certainly not without danger to the integrity of their eyes. Truly this is a lamentably apt illustration of what the late Nicholas Senn characterized as "the furor operativus."

As an instance of the hypnotizing effect which this growing trachoma fallacy has on the minds of some of our public health officials, I may be permitted to relate an occurrence in one of our Southern states. The director of public health of the state wrote me that about two years before a number of cases of trachoma were "discovered" in a certain locality in his state by representatives of the U. S. Public Health Service. Fifty of these patients, he said, were at once

operated on and immediately got well! However, a number refused operation, and every one of these subsequently went blind, according to my informant. The cure of the fifty was not only a professional achievement—it was a modern miracle! But how shall we characterize the subsequent blindness of all the unbelievers? It must, indeed, have been a fulminating type of the disease—ordinary trachoma is not so precipitate. When I asked for particulars concerning these blind children, I found that fortuitous circumstances had destroyed all trace of them. One of the condemned children, who had declined operation and had been excluded from school, later happened to come under my care. She was far from blind, having a simple folliculosis, and she fully recovered, with perfectly normal conjunctiva, under the simplest of treatment. Yet this health official insists that such overwhelming evidence convinces him that they were dealing with real trachoma!

Nothing has been heard of this epidemic since. It vanished, by the hand of God and enthusiastic surgeons, determined and exterminated at one fell swoop! This is only one of several somewhat similar instances that have occurred in various places in connection with this trachoma propaganda.

Believe me when I say that I gladly and in full meed accord all praise and gratitude to the U. S. Public Health Service for the several great achievements which must forever redound to its credit and good fame. But because a man saves my house from conflagration once, or a hundred times, that does not give him the right, no matter how exalted his motive, to enter my home and assault my people.

It is in an effort to save the children of my own people and others from what I believe to be an utterly unjustifiable assault that I take up the gauntlet thrown down by the U. S. Public Health Service in the very heart of my native state.

I regret that I may not here deal exhaustively with the subject, but of this neither time nor your patience will permit. Hence, what follows must be as brief and as practical as it is possible to make it.

DIFFERENCES BETWEEN FOLLICULOSIS AND TRACHOMA

Strictly speaking, conjunctival folliculosis is not a disease entity. It is a symptom, pure and simple—an expression of various causative factors.

Trachoma, on the other hand, is a syndrome, complete in itself, and due to a single specific cause, in the belief of the world's best authorities, and is, therefore, a disease entity.

For the purpose of this discussion, however, it is convenient to regard folliculosis as a manifestation of a syndrome, and a manifestation so important in this connection as to warrant our tentative consideration of it as a unit of morbidity. The two conditions will be discussed here in brief consecutive paragraphs so as to contrast them as clearly as possible in the mind's eye.

Definition.—Folliculosis is a subacute or chronic affection of the conjunctiva, with little or no inflammatory reaction; occurring in children and young adults of lymphatic temperament, without regard to present social or physical conditions; caused by any one or more of a variety of irritant factors; characterized by a varying degree of adenoid hypertrophy of the subepithelial lymphoid elements of the conjunctiva, of an essentially benign nature; manifesting but slight subjective symptoms or none at all, and invariably tending, after a longer or shorter period, to spontaneous and complete recovery.

Trachoma is a chronic inflammatory disease, with acute exacerbations, primarily of the conjunctiva, of specifically infectious origin, of acute or insidious onset, occurring in epidemic form only in surroundings of personal and community uncleanliness, and characterized in its course by three stages of conjunctival

changes, namely: first, the so-called granular or follicular stage; second, the papillary, or hyperplastic stage, and third, the cicatricial or connective tissue stage, to which must be added certain frequent corneal changes marked by ulceration, opacification and pannus.

Incidence.—Wherever that greatest of all industries and endeavors, the propagation of the species, is found among mankind, there will be found folliculosis among the youthful products of the great mill of humanity. In varying degrees, from the faintest and mildest to the most pronounced and even startling phases of development, it will be found in at least 75 per cent. of all children, mostly between the ages of 6 and 18 years. It is not confined to schoolchildren. I have seen it in children from the farms who had never seen the inside of a school. It is seen in the scions of paladin and pinchbeck, of plutocrat and pauper—in a word, in children of all sorts and conditions, though perhaps in varying proportion. In marked degree—the condition that is so often and so unfortunately mistaken for trachoma—it occurs in from 2 to 10 per cent. of all children. When large numbers of children are examined, as in the public schools, it is invariably found most frequently among those from 6 to 10 or 12 years of age, gradually diminishing in incidence as the older children are inspected, until when the age of 17 or 18 years is reached, little or no folliculosis will be encountered. It is rarely seen in adults, except in the mildest residual form. The history of the incidence of folliculosis is therefore characteristic, and when any considerable numbers of children are suspected of trachoma, the demonstration of such a history of incidence should be a powerful, even an unanswerable argument in the negation of a positive trachoma diagnosis.

Trachoma, on the other hand, is endemic and epidemic only in certain areas. In the United States, outside some communities of foreigners, it can be

shown to exist endemically only in the mountains of Kentucky and East Tennessee (where Stucky[1] found and heralded it twelve or fifteen years ago—though Norris and Oliver[2] refer to its presence there thirty years ago—and there it has stayed), and among certain Indian reservations. In these localities hygiene and sanitation, both of person and community, are notoriously lacking. I have never heard of an epidemic of real trachoma in any other community of native-born Americans, where decent habits and surroundings prevail. Furthermore, trachoma is preferentially a disease of adult life, according to Fuchs[3] and others, though it is by no means a respecter of any age. When it occurs epidemically, however, it invariably attacks persons of all ages, and is *never* confined either to children or to adults. The history of incidence alone, therefore, is sufficient to differentiate it from folliculosis.

Etiology.—In folliculosis, first and foremost as an essential predisposing factor, especially in the well marked cases, is the existence in the child of the lymphatic temperament, as evidenced by the presence of hypertrophied tonsils and adenoids and other lymphatic tissues. Given this, and the addition of any irritant factor in the eyes, whether it be physical (foreign bodies, wind, smoke, etc.) chemical (acids, alkalis, various drugs), or bacteria (any one of a score or more of varieties of micro-organisms), or, which I believe to be an almost constant factor, the eyestrain of refractive errors, and folliculosis will appear. The condition is therefore merely the diathetic expression of a symptom which has no specific causation. From the foregoing, it is evident that folliculosis may and does at times occur in suitable types of individuals as a result of irritation from trachomatous infection,

1. Stucky, J. A.: Mod. Hosp. 5: 51, 1915.
2. Norris and Oliver: System of Diseases of the Eye, Philadelphia, J. B. Lippincott Company.
3. Fuchs: Text-Book of Ophthalmology, Ed. 5, Philadelphia, J. B Lippincott Company, 1917.

and in this coincidence lie the crux and casus belli of our polemic diagnostics.

The close relationship between folliculosis and the lymphatic diathesis was first emphasized, I believe, by Alger[4] in 1910 ("conjunctival adenoids"), and by Oertel[5] in 1912 ("eye adenoids"). In more than 300 cases of marked type that I have examined in the last few months every single patient—100 per cent.—had, or had had, hypertrophied tonsils and adenoids. Oertel has made the same observation in several hundred cases. Nardin[6] testifies to the same occurrences. This could hardly be a coincidence. No such association of conditions can be shown in true trachoma.

There is one, and only one, exciting cause of trachoma, and that is a specific infective agent. The world of ophthalmology is practically a unit on this point. Authorities do not agree that the particular micro-organism has been discovered and isolated, though many, among whom Lindner,[7] Weeks,[8] and Edmondson[9] are prophets, are inclined to accept the trachoma inclusion bodies of Halberstädter and von Prowazek as the specific agent. The admittedly extreme difficulty in the technic for their demonstration has no doubt militated against their general acceptance.

It appears to be a universally accepted view, as is emphasized by Wilder,[10] Ellis[11] and many others, that the essential predisposing cause of trachoma in epidemic form is personal uncleanliness and lack of hygiene and sanitary surroundings. It is therefore a disease of filth and sloth and its epidemic presence is a reproach to the community in which it exists.

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4. Alger, E. M.: Post Graduate **25**: 49, 1910.
5. Oertel, T. E.: Follicular Conjunctivitis, Its Relation to Adenoids, J. M. A. Georgia, 1912.
6. Personal communication to the author.
7. Lindner, K.: Arch. Ophth. **41**: 333, 1912.
8. Weeks, J. E.: Diseases of the Eye, Philadelphia, Lea & Febiger, 1910.
9. Edmondson, E. E.: Ophthalmology **12**: 41, 1915-1916.
10. Wilder, W. H.: Ophth. Rec. **10**, November, 1901.
11. Ellis, H. B.: South. Calif. Pract. **21**: 3, 1906.

PATHOLOGY

The pathology of folliculosis, as summed up by Collins and Mayou,[12] is simply and only in the hypertrophy of the subepithelial lymphoid elements of the conjunctiva. It is a true adenoid hypertrophy and is histologically indistinguishable from the adenoid hypertrophy of the nasopharnyx. In the most pronounced cases, this development, as mentioned by Wootton [13] in 1914, is invariably found not only throughout the palpebral conjunctiva but also in varying degree in the upper nasal quadrant of the bulbar conjunctiva, sometimes extending half way from the fornix to the corneal limbus, and it is also often to be found on the semilunar fould. This bulbar development has been described by some observers as being characteristic of trachoma. It is not.

The pathology of trachoma is much more extensive. In the follicular stage the trachomatous conjunctiva is histologically identical with that of simple folliculosis. In the words of Fuchs: "The papillary growths which (in trachoma) impart to the conjunctiva its velvety or raspberry-like appearance are caused by an increase in size of the surface of the hypertrophic conjunctiva. The latter is thrown into folds, between which correspondingly deep clefts are formed; then on cross section the folds appear under the form of papillae." Later there is a gradual increase of the connective tissue elements of the papillae, which crowd out and destroy by slow advancing process the natural conjunctiva of the lids. Thus little by little, and more and more after the stimulus of each acute exacerbation of the disease, the connective tissue increases at the expense of the palpebral conjunctiva, until finally the entire inner surface of the lid is covered with scar tissue, and the conjunctiva proper has undergone complete destruction and disappearance. The pannus of trachoma is, according to Fuchs, a soft, new-formed

12. Collins and Mayou in Pyle's System of Ophthalmic Practice, Pathology and Bacteriology.
13. Wootton, H. W.: New York M. J. 99: 580, 1914.

tissue, rich in cells, and abounding in blood vessels, and greatly resembling the infiltrated trachomatous conjunctiva. It insinuates itself between the corneal epithelium and Bowman's membrane, sometimes destroying the latter. In mild cases, it undergoes resorption under appropriate treatment, leaving the cornea with little or no permanent damage.

Semeiology.—Folliculosis is often absolutely without subjective symptoms. When there is a marked refractive error, relief is sought for the accompanying asthenopia, and the follicular condition is discovered in the course of routine examination. Sometimes slight photophobia, itching or gritty sensations leading to rubbing of the eyes, and a slight purulent discharge are present; and these symptoms are due to the presence of an infection which may itself have been the exciting cause of the folliculosis. In the vast majority of cases, the condition is found only on routine examination of the eyes of schoolchildren, and not because of any complaint on the part of the individual affected.

Objectively, on eversion of the lids, the typical follicular development is at once recognizable. Masses of soft, semitranslucent nodules are seen usually in somewhat irregular rows, hemispherical or ovoid in shape, varying in size from 0.5 to 3 mm. in diameter. In color, the whole surface may range in different cases from apparent anemia to a deep, dull red. The conjunctival vascular distribution can always be traced with the use of the loupe, in and about these formations, and between the follicles at intervals can be seen tiny patches of normal conjunctiva. The follicles on the upper tarsus are always less numerous and smaller than elsewhere. In the marked cases, the retrotarsal fold of the upper lid is heavily involved and the lymphoid hypertrophy may be seen extending well into the bulbar conjunctiva in the upper nasal quadrant. The semilunar fold often participates in the phenomenon. There is never a sign of the deep papillary hyperplasia of the mucosa proper as is seen in

diphtheritic, vernal and Parinaud's conjunctivitis, trachoma, the exposed mucosa of ectropion and late stages of gonorrheal ophthalmia. There is no evidence of cicatricial tissue, and the cornea is never involved in any way.

I have occasionally seen a marked folliculosis of the upper and lower lid of one eye, and no sign of the condition in the other eye. As Alger has remarked, foreign bodies (eyelashes, cinders, etc.) are often found lying in the conjunctival sac, surrounded with a mucoid film and evidently having been in situ for a considerable length of time. Occasionally there is a slight ptosis, probably due to the crowding and weight of the follicular formations in the retrotarsal fold.

These phenomena may and do often persist for months and even years without harm to the patient or others, and eventually, even without any treatment whatever, disappear, just as the nasopharyngeal adenoid atrophies, in early adult life, leaving the conjunctiva sound and normal, organically and functionally.

Trachoma may have an insidious onset according to some observers; but such men as Fuchs, Weeks and most other authorities distinctly agree that the usual initial symptoms are similar to those of other acute infections of the eye—lacrimation, inflammation, purulent discharge, pain, etc. In children of the lymphatic type it may well be, and, indeed, logically must be true that the specific trachoma irritant sets up a follicular hypertrophy just as any other irritant would do; but it is very certain that not all trachoma cases begin in this way. Acute exacerbations occur accompanied by watery and purulent secretions. In the course of a few weeks usually, though varying widely in point of time in different cases, but always eventually, the characteristic papillary hyperplasia of the mucosa proper appears, transforming the palpebral conjunctiva into a more or less indurated, thick, homogeneous, deep red, velvety looking structure, irregularly cut up by cracks

and crevices formed by the inverted epithelium. All trace of the vascular supply is lost, swallowed up in the extensive hyperplasia. Then a little later, tiny spots and streaks of connective tissue deposits appear, and, as Axenfeld[14] has pointed out, these cicatricial areas are exclusively lesions of trachoma and therefore pathognomonic. In many cases, the cornea becomes infiltrated and cloudy (always, in the early stages of true trachoma according to MacCallan[15]); ulcers appear, and when they heal they leave opaque scars in the corneal tissue; a subepithelial film appears at the upper limbus, gradually extending downward across the cornea, thickly streaked with blood vessels—the pannus of trachoma; the upper lids droop heavily, and seem partly paralyzed; and in many cases, vision is almost or quite destroyed. In the course of this sequence of events, which may cover a period of years, intervals of amelioration occur, only to be followed by renewed exacerbations; more and more cicatricial tissue forms in the lids, until the whole hyperplastic conjunctiva is replaced by scar tissue.

The inflammation ceases; the damage done is permanent. This is the so-called cure of trachoma, whether brought about by medical or surgical interference, or in the course of natural events. Contractions may occur which deform the lids by inversion or eversion, and add to the misery of the victim.

Course.—The course of folliculosis is variable. Under appropriate treatment, it may disappear entirely in a few weeks, or even a few days, while other, perhaps most, cases, whether treated or untreated, persist for several years. But the rule of recovery with complete restoration of normal conjunctiva is invariable, whether properly treated or not treated at all. As Parsons[16] and others have said, it never develops into

14. Axenfeld, Theodor: Bacteriology of the Eye, 1908.
15. MacCallan, J. F.: Trachoma and Its Complications in Egypt, New York, G. P. Putnam's Sons, 1913.
16. Parsons, J. H.: Diseases of the Eye, Philadelphia, P. Blakiston's Son & Co., 1907.

trachoma. Improper interference may, of course, produce complications.

True trachoma is never cured in a short time. This point is emphasized by Edward Jackson and Theobald, quoted by T. W. Moore;[17] by Allport,[18] W. T. Lister[19] and a host of other well-known observers; while Ray[20] quotes Axenfeld as questioning whether trachoma is ever cured in the true sense of the term—a feeling probably shared by most ophthalmologists. The infection invades every nook and corner of the papillary structure of the conjunctival mucosa, and can be eliminated only by the destruction of the mucosa and its replacement by cicatricial tissue. An eye once infected, while subject to periods of quiescence, is therefore never free from recurrent acute attacks until the process of cicatrization has become complete, whether through surgical interference or in the course of natural events. Most cases drag on for years, and ophthalmologists of the widest experience declare that under most favorable conditions and most vigorous treatment it is too much to expect a cure in any case of trachoma under one or two years. Even so, the cure is not a cure in the sense of a restoration of normal forms and functions, but is merely a subsidence of inflammation following the complete substitution of the infected palpebral conjunctiva with nonfunctioning connective tissue.

Communicability.—There are writers who declare that folliculosis is infectious. No unquestionable evidence has been introduced to prove the statement, which is apparently a "hand-me-down" opinion. The fact that it appears in large numbers of schoolchildren is the sole argument offered in support of the theory. It is an imponderable argument. One might as well say that hypertrophied tonsils and adenoids, or errors of refraction are infectious for the same reason. Greef

17. Moore, T. W.: West Virginia M. J. **5**: 49, 1910-1911.
18. Allport, Frank: Ophthalmology **12**: 494, 1915-1916.
19. Lister, W. T.: J. Roy. Army Med. Corps **32**: 487 (June) 1919.
20. Ray, J. M.: Louisville Month. J. M. & S. **21**: 362, 1914-1915.

and Mayweg, cited by Axenfeld, and others, have made repeated efforts to transfer the disease from one individual to another and have invariably failed. The multiple occurrence of well-marked cases in the same family is undoubtedly far less than the occurrence of familial multiple cases of pathologic tonsils and adenoids, or refractive errors of the vision.

A coincident or causative infection in a case of folliculosis is, of course, transferable, and this may or may not set up a folliculosis, according as the recipient is or is not himself of the lymphatic type. In the observation of hundreds of cases, I have particularly noted that familial occurrences are not the rule, and it is seldom, and evidently only incidental, that any two of those affected are deskmates, or otherwise in close personal contact.

Trachoma in its acute form is infectious and contagious—highly so. Addario and Greef, cited by Axenfeld, have proved its contagiousness by direct experiment on blind human eyes. This much is certain: A nontrachomatous eye can be made trachomatous only by inoculation with the discharge from an eye infected with trachoma.

In its chronic form it is only slightly contagious; and in the present-day environments of good sanitation and hygiene, and the exclusion of trachomatous immigration, the acute variety is seldom encountered, at least in this country. That is undoubtedly the consensus of best opinion in the world of ophthalmology. There is, therefore, as Brav [21] has tersely stated, no "trachoma problem" among us; certainly not to the extent that would warrant a wholesale surgical attack on the eyes of our children.

The city of New York has been through this agony, but several years ago saw the light; not, however, until, according to Alger, 50,000 schoolchildren had been operated on. Most of the cases they used to call tra-

21. Brav, A.: New York M. J. 93: 407, 1911.

choma are now recognized as folliculosis. These patients are not excluded from school, and are given only the simplest of treatment. The incidence of the cases now is in the same proportion as it has always been and always will be.

It is ill conceived and wholly useless to declare trachoma a quarantinable disease, unless "acute trachoma" is specified, since the unmodified term "trachoma" gives opportunity for too wide a margin of error and dispute in diagnosis. As a matter of fact, all boards of health would do wisely and well to avoid all specific reference to trachoma. The phrase "any eye disease accompanied by purulent discharge" should be used as a basis for quarantine, and this would cover all contagious eye diseases, for it can be accepted as a fact that no disease of the eye is contagious except such as is transferred through the medium of a discharge.

Coincident Phenomena.—The outstanding feature in the accompaniments of folliculosis is the constant presence, in the marked cases, of hypertrophied tonsils and adenoids, and the frequent coexistence of adenopathy in other tissues, as has been repeatedly pointed out by various observers in the last twenty-five or thirty years. This is not strange, for it must and will eventually be universally recognized that folliculosis is itself merely an ocular expression of adenopathy. Next is the almost, if not quite, constant presence of refractive errors. Parsons directed attention to this in 1907. Eyestrain has a direct bearing, as a low-grade irritant, on the development of "eye adenoid" hypertrophy. Not infrequently a superimposed infection of mild type is recognized by the presence of a slight discharge.

So far as I am aware, trachoma is not associated with any diathesis, dyscrasia, organic insufficiency or peculiarity, or systemic pathogenesis of any kind. It is strictly and wholly a localized infection. It is generally accepted that coincident infections are of fre-

quent occurrence. But it is well to note here for emphasis that trachoma in epidemic form is inseparably related to personal and community uncleanliness—lack of bathing facilities; lack of clean clothes, utensils and individual toilet articles; absence of sewerage and proper drainage; inadequate ventilation—in a word, bad living conditions. Only in such a field could an epidemic of trachoma exist; none, I believe, has ever existed otherwise; and hence, the fear of such a possibility in our civilized society today can justly fade from the minds of thoughtful men.

Diagnosis.—In many cases of the very early stage of trachoma in individuals of the lymphatic type, it is impossible by any known clinical sign or laboratory test to distinguish between trachoma and folliculosis. In such individual instances, time alone can establish the diagnosis. This, however, as Allport has emphasized, is the one and only condition and phase in which there is the slightest excuse for the mistaking of the one disease for the other. And even here the mistake could be excusably made only in the consideration of individual cases. When large numbers of cases are encountered and the history of incidence, as heretofore described, is properly considered and logically administered, there is no justifiable reason why school folliculosis should ever be mistaken for a trachoma epidemic.

But the great point to be stressed is that every case of trachoma necessarily progresses to the stage of true papillary hyperplasia (as clearly distinguished from simple follicular hypertrophy), with vascular obscuration, some degree of induration and thickening of the entire lid structure, and the formation of cicatricial tissue; and unless, and until, this stage has been reached and demonstrated, the disease known as trachoma is not and cannot be diagnosed. And when it is reached, there can be no argument, for this sign is pathognomonic.

Treatment—In folliculosis, nature, unaided, will eventually bring about a cure even in the severest cases. She may be hurried and helped by simple measures, such as mild antiseptic and soothing lotions. Coincident infections are managed in the usual ways. Refractive errors should always be corrected and hypertrophied tonsils and adenoids should be removed. These are matters of general principles whose beneficial effects are sometimes startling. Such procedures as the various methods of grattage and expression should be avoided except in the severest manifestations of the disease, and then only with the understanding of the possible injurious effects which may follow the interference. Even so, recurrences are very frequent after an interval of a few months, so that little or nothing is gained by the procedure, while permanent damage has been done the conjunctiva. Fuchs, cited by Alger, says, "Cases in which follicles exist without causing any annoyance are best left without treatment."

It logically follows, then, that no surgery should be countenanced in suspected trachoma. Only when the disease has shown its characteristic signs should operative measures be considered. Even then, many competent ophthalmologists deny the efficacy of surgery in the early stages. Repeated operations must invariably be performed before all of the diseased conjunctiva is transformed into cicatricial tissue, though this will admittedly hasten this outcome. Operation must always be reinforced by prolonged and faithful treatment. Cleanliness, antiseptics and astringents for the pathologic condition of the conjunctiva, and heat and mydriatics for corneal involvements are indicated under the usual principles governing the care of eye inflammations. But whether surgical or medical attacks are instituted, or whether Nature is left to her own means and devices, the cure, so called, of trachoma is simply and evidently only in the substitution of scar tissue

for conjunctiva. It is an absolute fact that this is the inevitable result in any eye once infected with trachoma. If this be a cure, make the most of it.

In certain old advanced cases, the surgical removal of the upper tarsal cartilage is of admitted benefit often attended with brilliant results, as Cary [22] and others have shown. But this is done only for the purpose of mechanical relief, and usually after the active infection has burned itself out.

Prognosis.—If it has not been improperly treated or surgically interfered with, the outcome of folliculosis is invariably complete recovery, sooner or later.

The last state of trachoma, no matter how treated, is an eye permanently damaged in structure and function. As Allport has said, "There is no royal road to cure."

CONCLUSIONS

The contrast has been drawn. Whether my argument, per se, is valid or invalid in this connection is a matter of no importance. But a proper solution of the question at issue is a matter of the very highest importance to the people of this country.

If a malignant and dangerous form of trachoma is virtually pandemic among the schoolchildren of our country, as some would appear to have us believe, a quick and authoritative recognition of the fact is, for obvious reasons, of the very quintessence of necessity.

If, on the other hand, we have, of ubiquitous incidence among our schoolchildren, not trachoma, but a simple and harmless affection that is being widely mistaken for trachoma, and by virtue of this mistake our children are being surgically attacked wholesale and not without danger to the integrity of the eyes, it is equally important, for equally obvious reasons, that this should be definitely known.

22. Cary, E. H.: Histology and Pathology of the Superstructures of the Lid in Trachoma and Treatment, J. A. M. A. 71: 1647 (Nov. 16) 1918.

But how are we to decide the issue? Few, if any, of us who practice preventive medicine and are guardians of the public health in our respective states are trained ophthalmologists.

Perhaps every state board of health should have in its membership a competent ophthalmologist; but have they?

May I offer a suggestion? Why not have every state board adopt a rule that the solution of all questions of serious importance in connection with the eyes of schoolchildren shall be entrusted only to such men as hold the certificate of the American Board for Ophthalmic Examinations? Here is one of the real purposes for which this board exists—the protection of the people. It was created out of the combined wisdom and efforts of the American Ophthalmological Society, the Section on Ophthalmology of the American Medical Association, and the American Academy of Ophthalmology, for the purpose of establishing and maintaining a high standard for the practice of ophthalmology. At the present time, application for its certificate is voluntary, but the day is at hand when the holding of such certificate will be obligatory, by law and popular demand, on all who would practice this specialty. Whoever else may or may not be competent to practice this branch of medicine and surgery, it is at least certain that the holder of such a certificate from this time forward is backed by the guarantee of the nation's best thought as being properly qualified and equipped to practice ophthalmology.

It would be at once conservative and progressive, in the best sense of each term, as well as gracious and becoming to a degree, did you, as the representatives of a great section of a great organization, recognize the unselfish efforts of this board by utilizing the forces and facilities it offers you. And by so doing would you not win credit and security for yourselves, your profession and your devoted people?

In addition to the reference already given, I offer the attached hand-picked bibliography, coupled with my own observations, for the corroboration and support of every statement made in the foregoing.

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ABSTRACT OF DISCUSSION

ON PAPERS OF DRS. MC MULLEN AND JERVEY

Dr. Arthur T. McCormack, Louisville, Ky.: The campaign which has been conducted in Kentucky under the direction of Dr. McMullen is one of the greatest triumphs of medicine in the real solution of a tremendous practical problem. Discussion of the subject divides itself into two parts: the differential diagnosis of the disease and the relief of sufferers from a disease which has filled poor houses and asylums for the blind with its victims, a disease which has kept a considerable percentage of children from school or from making progress in school and which has pauperized whole precincts in certain counties. From very early times there have been nests of trachoma in certain definite geographic sections of Kentucky. These sections formerly were quite isolated; they had practically no schools, no railroads, and no roads. With the invasion of these districts by commercial enterprises and by people with means, the opening of schools, building of roads, etc., the trachoma problem was no longer a local one. The disease spread, invading many sections of the state. The new order of things is gradually overcoming these conditions. In many sections in Kentucky we are holding clinics. The legislature made an appropriation for a traveling clinic, making it possible to get at the disease in places too remote for government hospitals to reach. The work Dr. McMullen and his associates have inaugurated in Kentucky at first met with the opposition that is bound to arise, but today the profession is cooperating in every way. There is no step in medical progress, in typhoid fever, yellow fever or in malaria, or in any other line of work in which the medical profession of the United States can take more pride than in the campaign against trachoma.

Dr. Henry Dickson Bruns, New Orleans: There are great endemic trachoma centers in the United States, and nobody can sufficiently praise the work that has been done in the hospitals and stations of the Public Health Service in these regions. Then, we must postulate this: Trachoma always leaves scars. Unless the disease endemic among the children has been of brief duration, or unless extraordinary precautions have been taken, examination of the adults of such a community must show the scars and lesions of trachoma, if that were the disease; and that is the point on which all testimony ought to be brought, and not on the almost impossible question of the differential diagnosis.

Dr. Theodore Oertel, Augusta, Ga.: Some members of the profession have overlooked a few vital points in relation to folliculosis as it is generally understood. I am quite sure that those who claim that follicles on the globe and on the tarsus indicate that this is not simply folliculosis but trachoma, are in error. I have several times examined the school children of Augusta. In my private and clinical practice I have seen three cases that I called trachoma in twenty-two years. On the other hand, I have seen a great many children with folliculosis, and in a large proportion of them the follicles were on the conjunctiva. In many there were masses on the tarsus. My recent examination of school children, including those in the high schools, failed to disclose any scar tissue in any lids that I could feel might have been caused by trachoma. I saw no case of pannus or other corneal involvement which I could attribute to trachoma, which I believe proved that these children did not have trachoma in their younger years. I have been teaching for many years that in every case of marked simple folliculosis the same tissue is found in the throat as a reaction to some kind of irritant. This is a very valuable diagnostic symptom in the differentiation between these two maladies.

Dr. James A. Hayne, Columbia, S. C.: Children were brought to Columbia by their parents for a disease of the eye which was diagnosed by the ophthalmologists of Columbia as trachoma, and ten or twelve were subjected to operation. They came from one section of the state. These cases were not reported by physicians, but by the mothers and fathers of the children because they could not pursue their studies in school. I sent two ophthalmologists to this district and they reported thirty or forty cases of trachoma. I then called on the United States Public Health Service for help. They sent a man who was skilled in those operations, and he held a clinic in one town to the satisfaction of all parties. Then he went to the next town and there was some difference of opinion as to the nature of the disease. Dr. Calhoun of Atlanta made a positive diagnosis. Dr. deSchweinitz of Philadelphia called one of these cases that he saw suspicious. Dr. Jervey of Greenville said it was folliculosis. I called a

committee of three physicians of South Carolina to determine whether it was folliculosis or trachoma. Two of those physicians responded and served; one was detained for various reasons and did not serve. These two who served differed absolutely and positively on the subject. One said it was trachoma, and the other said it was folliculosis. Then I called on the Public Health Service to determine what it was. The Public Health Service did not come into South Carolina and stir up trouble, but came because the ophthalmologists of the state did not know the difference between trachoma and folliculosis. They made a diagnosis positively and distinctly, and were begged by the physicians of one town to hold a clinic, which they did. They operated on those children, and the children are now attending school. The disease seems to have stopped in that community.

Dr. Theodore Oertel, Augusta, Ga.: I am quite sure that the three cases I saw were not trachoma.

Dr. Walter H. Brown, Washington, D. C.: I wish these gentlemen would tell me how they are going to erect a barrier that will keep trachoma localized in Tennessee or in Kentucky, which according to Dr. Jervey's statement seem to be the only places where it is prevalent. We who have been trying to study the transmission of diseases have learned that transmissible diseases or germs do not know boundary lines between states or countries; that they do not even respect the great barriers of the waters of the Atlantic and the Pacific. Just before I came here word was received at the office that there was in the port of New York a ship loaded with 1,500 Polish troops. Typhus fever has moved very close to the United States. And so I fear that Kentucky has moved very close to South Carolina and many other parts of the country. I am not concerned particularly with the discussion of differential diagnosis, but I am concerned with the sowing of endemic centers—not "epidemic," but endemic centers—of trachoma all over the United States. New Orleans many years ago did not want it known that they had yellow fever. It was a terrible disgrace. It interfered with trade. But New Orleans does not think that now. Kentucky does not think now that it is a disgrace to have trachoma. She knows her problem, and she is going ahead to solve it. This thing shall be looked at squarely from the standpoint of transmission of disease.

Dr. S. W. Welch, Montgomery, Ala.: I have been told that we have trachoma in the low country where the sawmill men have been getting a labor turn-over from all parts of the United States, and sometimes from southern Europe. Beyond doubt we have trachoma in the southern part of Alabama. This discussion has been purely academic, and to a practical man engaged in a practical work of controlling disease it is uninteresting. A country doctor in Alabama not

long ago diagnosed some cases seen in the public schools as trachoma. I asked the United States Public Health Service to send some one to look these cases over. He found about fifteen cases of trachoma, operated, and the children were relieved. There have been no further cases of folliculosis or trachoma in that institution.

Dr. Gustave Golseth, Jamestown, N. D.: A number of years ago, in a neighboring county a school nurse made a survey of the school children and found that a large percentage had pimples on their eyes. The health officer made a diagnosis of trachoma, and sent out orders that these children must be treated in order to enter the schools. There was no difference of opinion among the ophthalmologists; every one of them said that it was folliculosis or follicular conjunctivitis. The health officer called on the United States Public Health Service for help. After making the survey the Service man reported 132 positive cases and 350 suspected or suspicious cases. Some of us who believed in justice and in helping the children immediately asked this man, Major Oakley, to appear before the State Medical Association and read a paper on trachoma. He did so, and it was a very excellent paper. (I appreciate Dr. McMullen's paper very much, and I have nothing to say against his paper, but I have a very serious objection to his treatment for folliculosis.) After the paper had been read, a number of men discussed it, all condemning the diagnosis, stating that these were cases of folliculosis and follicular conjunctivitis. I agree that the condition should be treated, but to treat follicular conjunctivitis or folliculosis with the treatment used for trachoma is the most damnable thing we can do. We have one school for the blind in our state, and not one of the inmates is blind on account of trachoma. The county that was selected for this survey has fewer cases of trachoma than any other in the state. It is not my own county. If they had examined my own county, where we have quite a large number of Russian immigrants, I would expect to find quite a number of such cases, but this is the best county we have, and there was not one case of trachoma in the entire survey.

Dr. J. G. South, Frankfort, Ky.: Dr. McMullen is wiping out a terrible disease, one that has done great damage to the great state of Kentucky. Whether it be folliculosis or trachoma matters little to us. We are getting practical results through his wonderful work. I believe it is admitted by all that we have trachoma in Kentucky. Dr. McMullen is relieving all of these patients, practically all on whom he has operated. Absolutely no harm is being done. We see only wonderful results.

Dr. J. F. Hogan, Baltimore: About three months ago a child was found in a school in Baltimore with a case of suspected trachoma. I directed a member of the health depart-

ment, Dr. Herbert Laroque, an ophthalmologist, to see this patient and he verified the diagnosis. It was in a Polish child. Dr. Laroque conducted an investigation through this school, which was a very large one, where nearly all of the pupils were of Polish extraction, and found eight or ten cases which he diagnosed as trachoma. He then searched every school in the Polish quarter of the city, and found, among eight or nine thousand school children, thirty cases of trachoma. The diagnoses in these cases were verified by our best ophthalmologists. The same ophthalmologist examined a school, as a control, in the northwestern section which is attended by American children—the children of parents who have been here two or three generations—and found no cases of trachoma.

Dr. Hiram Woods, Baltimore: Somebody said that this discussion is simply academic. I do not think so. There is a class of cases which we see in everyday practice which is very, very common. This class fits into the description, given by Fuchs, of follicular conjunctivitis. The description of follicular conjunctivitis is this: children—usually children from American families, from our own country—present on the lower lid a number of tiny little elevations; a few may be on the upper lid; there is absolutely no irritation, vision is unaffected; no thickening of the lids; no scar tissue. A point I got from Drs. McMullen and Schereschewsky is most valuable in diagnosis. The capillaries of the conjunctiva are not hidden but can distinctly be traced up around the edge of the follicle. That is what we mean by follicular conjunctivitis. From that on up to trachoma, the condition Drs. Schereschewsky and McMullen have been finding in various states, there are certain borderland cases. Where this question fails to be academic is here: Physicians not connected with the Public Health Service watch those children and let them go to school. I do not think that we are making a mistake. Some men seem to think we are. Are these borderland cases really cases of trachoma? That is only a question that can be decided by results: Treatment and time. I operated on a child presenting the type of disease I have tried to describe, and I would not hesitate a moment to let that child go to school. But, on the other hand, there is undoubtedly a type presenting the symptoms I have outlined that goes on for months and months and the patients get well. They do not give the disease to others. If these children, the borderland cases, have real trachoma, they ought to be operated on, but if they are operated on and in two or three days are perfectly well, and do not show any scar formation afterward, how about the original diagnosis?

Dr. John McMullen, Louisville: Apparently two points have been made: One would seem to be that the man who sees the most trachoma cases appears to be the least com-

petent to diagnose the condition, and the other is that those of us who are operating for trachoma have been guilty of mistreating the patients. Several leading ophthalmologists of the United States have visited with us, observed what we do for these patients and agreed with us to the extent of following similar treatment in their practice. As to whether we are dealing with trachoma or some allied condition—I can see no objection to curing these abnormal conditions. No valid objection has been put forward as to why this should not be done. As to the South Carolina cases, I am exceedingly sorry that there was not more cooperation from all the local ophthalmologists. I had not the pleasure of knowing Dr. Jervey at that time and his opposition to this public health work was brought to my attention in some newspaper articles. In one of these Dr. Jervey was exceedingly condemnatory of the Service work.

Dr. Hiram Woods, Baltimore: It has been stated that absence from school for only three or four days is needed for the operative cure; but trachoma does not get well that way; follicular conjunctivitis—a perfectly harmless disease—does. Operation for the latter is rarely necessary. To my mind, the large percentage of quick cures is very suggestive of a large number of errors in diagnosis of trachoma. I am entirely willing to admit that in suspicious cases it may be right to err on the safe side. I doubt if expression does harm, but there is nothing gained in not admitting to ourselves that we have a very practical therapeutic proof of frequently mistaken diagnosis: nor do we know at present how to avoid it save through painstaking observation of the lesions in the two classes.

Dr. John McMullen, Louisville, Ky.: A survey of the schools of Cincinnati has just been completed by the state of Ohio and the city of Cincinnati. So far as I know, the ophthalmologists of Cincinnati agree with the findings in the 52,000 children examined. There were 139 cases of positive trachoma. A considerable number of the ophthalmologists of Cincinnati examined some of these cases in the city hospital, and the diagnosis of those cases recorded as trachoma was concurred in by all present. A recent survey in Texas of probably ten or fifteen thousand school children showed about the same percentage of trachoma in one section of that state. The word "assault" on the children was used by Dr. Jervey in referring to the operation for the eradication of trachoma and allied conditions without having seen the operation. Parents voluntarily brought their children to the clinic to be cured. The treatment was witnessed by the parents, local physicians, officials, etc., many of whom have since assured me of their heartfelt appreciation for the relief afforded the patients. Some very good men concurred in some of those diagnoses in Newberry, as Dr. Hayne has said. There

appears to be no consensus of opinion in diagnosing trachoma, but this is true in many other diseases and conditions. Three cases of suspected trachoma in Baltimore were recently examined by Dr. Herbert Harlan, Dr. Woods and myself. These cases were exactly the type as seen in South Carolina. Dr. Woods, Dr. Harlan and I agreed that one of those was a positive case of trachoma, while the other two were very suspicious. In reply to Dr. Woods as to whether trachoma could be cured in two or three days: Operative procedure removes at once all abnormal tissue and very decidedly shortens treatment. Many patients require only the one operation, followed by the necessary after-treatment, and can return to school in a few weeks. This is true of the three cases seen recently with him in Baltimore, provided they are given proper treatment.

Dr. J. Wilkinson Jervey, Greenville, S. C.: I have never believed that the United States Public Health Service was composed of men who are autocratic or unreasonable. They must expect to be criticized for they are public servants. If I choose to disagree with their methods, that is my privilege. If I can convince you that my methods are right and theirs are wrong, that is my privilege also. I am very sorry that Dr. McMullen has labored under the very serious misapprehension that I rushed to the newspapers with my troubles. The facts and the record prove otherwise. Dr. McMullen has mentioned the appearance of a faint pannus at the upper limbus which can be found often only by close inspection. You can find that in 95 per cent. of all eyes. In response to Dr. Welch, who is of the opinion that this discussion has been academic and uninteresting and not practical, I will relate a practical illustration which will, perhaps, come close to his heart. In Alabama, in the city of Montgomery, within the past few months, the United States Public Health Service diagnosed one hundred cases of trachoma among the school children. The same procedure was suggested there as in South Carolina, namely, excluding the children from school unless and until operated on. Some of the ophthalmologists of Montgomery protested against it. A committee of three ophthalmologists was appointed. That committee examined the 100 cases. And in a letter to me Dr. Thigpen, one of the examiners, said, "Much to the committee's surprise they found not a single case of trachoma." That seems very far from academic. A similar situation arose in Charlotte, N. C., in North Dakota and in various other places. Therefore there necessarily is a question whether or not these cases that are being dealt with as trachoma are really trachoma. I have seen many cases where harm has been done by the substitution of cicatricial tissue and adhesions for normal conjunctiva, and I defy any one to break the conjunctiva without getting a certain amount of scar tissue.

INDUSTRIAL EPIDEMIOLOGY

WILLIAM ALFRED SAWYER, M.D.
ROCHESTER, N. Y.

Industrial epidemiology is that phase of medicine which seeks to improve the health of individual workers and prevent the transmission of disease to their fellows. This is my conception of the subject, and from that point of view I wish to discuss briefly some of its practical problems. Needless to say, the field of industrial epidemiology is still uncharted; but from experience and knowledge gathered from other fields of medicine, together with our own somewhat limited experience, perhaps we can, with safety, make a few deductions. If this aspect of medicine is to be of real service to industry, it must be applied so safely and sanely that it can show results to the men at the head of our industries. Fortunately or unfortunately as the case may be, this industrial patient takes more pacifying than the "pacifier" so often handed out by many public health authorities. To be sure, industry expects to be protected against the commonly known communicable diseases, as does the rest of our population, and may be satisfied for the time if its health supervisor watches over this phase of its problems; but this is not enough. Is it not true that there are diseases, pandemic, may we say, of physical impairment other than the group of communicable diseases so frequently epidemic or endemic, which are as detrimental to the well being of our industries, and to which we need to give our sincere attention? Let us consider first of all those communicable diseases that we think of as being under control, and which are now considered of most concern to industry.

Smallpox, typhoid, diphtheria, malaria and yellow fever have been conquerable or controllable so far as the general public is concerned and are no longer a menace. Eternal vigilance, however, is necessary if they are to be kept in control. What has been done with respect to the general public can the better be done for our industries, which are under more immediate supervision, and in the last analysis only concentrations of the general public.

SMALLPOX

In the organization with which it is my good fortune to be connected, vaccination against smallpox is required of all new employees. This is true of a few other forward looking organizations, and must be true of all eventually. It may be of passing interest to relate a small so-called epidemic in my own company, which took place adjacent to one of its plants in 1915. The first case is believed to have been that of a milkman, who, having the disease without its being recognized, was permitted to continue at his work, thus spreading the infection. There were in this epidemic fourteen cases of smallpox, eight of which appeared among the employees of the company.

The means employed to control the disease were: (1) immunization by vaccination of all employees not giving a satisfactory history or showing a satisfactory vaccination scar; (2) isolation with quarantine of all cases of smallpox; (3) house to house canvass of all homes adjacent to the plant with examination of the occupants for possible smallpox, and (4) investigation of cause of absence of all employees from work one day or more.

In all, 2,050 vaccinations were performed, with more than 50 per cent. of "takes" and not a single case of infection. This is a small percentage of "takes" but is explained, I am told, by the high percentage of former vaccinations among the people of the plant

and the community. Many of you may know that Rochester has been well protected against smallpox for many years. This epidemic of smallpox was of a mild type, that is, while most of the cases presented widely distributed eruptions, there were no fatalities, and for some of the patients there was little, if any, discomfort. In defense of the practice of vaccination it is of interest to note that of the fourteen cases making up the epidemic, only one had ever been vaccinated. This one had been vaccinated ten years before and had an extremely light attack. From that time vaccination against smallpox has been required of all new employees, and only in exceptional cases has there ever been any objection to it. Vaccinations may be done at the city health bureau or at one of the companies' dispensaries or by any physician. I know there have been attempts in our own organization to have this practice abandoned, because it was thought that it kept us from securing a certain few who objected to it.

TYPHOID

With regard to vaccination against typhoid, should we attempt in our industry to educate as to its value and then offer it without charge to all who wish to avail themselves of its protection, or should we go to the extent of making it compulsory? Surely there is no better time to introduce such a measure. If inoculations were made late Friday afternoon or Saturday morning, sufficient time in the majority of cases would be given for recovery from the reaction. City and health departments would furnish the vaccine, thus making the cost a negligible factor. To be sure, managements would object strenuously if much lost time were to result from the reaction, but let it be hoped that eventually they will be convinced of the value in industry of all such protective measures: It is "up to" the physician "on the job," together with the aid of public health authorities, to "put it across."

DIPHTHERIA

Diphtheria is a disease which seems to be constantly with us to a greater or less extent, but it can be diagnosed and prevented readily. In industry, cultures should be taken of all suspicious sore throats, and the employee should be sent home until it is proved that it is or is not diphtheria. This is good treatment for any one ill from sore throat, despite the etiologic factor. If it proves to be diphtheria, so much the better as regards recovery. All employees working in the same department with such a patient should have a culture of their throats taken and be given immunizing doses of antitoxin when indicated. If we had the same positive means of diagnosis and control for other diseases that we have for diphtheria, epidemiology in industry would be very simple. It has been suggested that we offer the Schick test to all employees. I do not know its value and I am not sufficiently familiar with it to offer a suggestion.

TUBERCULOSIS

Tuberculosis, of course, presents an ever present problem, just as vital in industry as in any other part of life and perhaps even more so. Industry can do much here in giving proper working conditions and providing proper ventilation and light, with absence of crowding. Complete and careful physical examinations of all new employees, with periodic reexaminations when indicated, cannot fail to help in the crusade against this disease. Fortunately, factory environment is relatively free from the menace of tuberculosis. If it be assumed, as seems reasonable, that tuberculosis is often acquired in childhood and usually shows itself in later life at some time of lowered vitality, the greatest service that industrial medicine can do, either for itself or for the community, is to make careful physical examinations, with follow-up in doubtful cases. It is not amiss in

health supervision to consider carefully the possibility of tuberculosis in all cases presenting any one of the four signs: (1) loss of weight; (2) loss of appetite; (3) general weakness, or (4) rise in temperature. These factors should be carefully noted at the time of the entrance physical examination, and subsequently on any visit made to the medical department, and followed up if found present. Much more will be accomplished by such procedure than by waiting for signs in the chest so evident that an amateur can detect them. I believe that any one engaged in industrial work will agree that an astounding number are missed until it is to late; but by the foregoing consideration, it is possible to make much greater progress.

With respect to other contagious diseases not mentioned above, I have nothing to add, except that industry should cooperate to the fullest extent with all health agencies in their prevention and control.

RESPIRATORY DISEASES

As for respiratory diseases, such as the common colds, influenza and pneumonia, so little real progress has been made regarding the facts that little of a definite nature can be stated. In the influenza epidemic of 1918 and 1919, many practices were used in our industries, the essentials of which consisted for the most part of sending home all employees with a temperature of 100 F. or over, or who were coughing and sneezing, thereby menacing those about them.

In many instances such cases were followed up to see that the patient had proper attention and care at home. Bulletins, etc., usually appeared giving salient points as to prevention, while foremen and others in charge of workers were sometimes given information that would help them in detecting workers with prodromal symptoms. By such procedures, spreaders of the infections were often eliminated early. Ventilation, general cleanliness of buildings and efforts to

reduce overcrowding and fatigue in like manner were measures used to some extent. Frequently we hear of rooms being sprayed with this or that antiseptic or germicidal solution, or of this or that sure preventive being used in the nose and throat as sprays. One hesitates to speculate as to how much harm has thus been done or how much money has been wasted. Now that we have had time to think the matter over and the hysteria of the occasion is passed, may we not formulate some scheme or plan that will aid us, and until more of the story has been unfolded, help us in curtailing the large waste due to our very frequent and all too common colds and their resultant conditions?

OUTLINE OF A PLAN

1. Instruction for all those in a directing or supervising capacity, in recognizing a cold in its incipience, with orders to send to the physician every one who falls within this group.

2. Authority to the physician to send home employees who appear ill or have a temperature of 100 or over, and who are sneezing and coughing, or have a profuse discharge from the nose.

3. Follow up to see that those persons who are sent home receive proper treatment. This should be done by a visiting nurse. This means helping the local health department, in that certain other diseases may be detected in their early stages.

4. Careful inspection by the physician on their return of all who have been sent home.

5. Charting of records of sickness incidence by departments so that attention may be quickly turned to those departments showing an increased amount of illness.

6. Education for all as to methods of prevention, which may be done through plant publications, bulletins, leaflets or lectures.

7. Proper ventilation, cleanliness of surroundings, prevention of fatigue, and last but not least the avoidance of overcrowding. One has only to visit some of our industries late in the day when all the freshness and sweetness of the air has been vitiated to appreciate how far in the dark ages we are living.

I do not know how much time is lost in our industries from colds and their resultant ills, but I imagine it to be very large; and if such a program could be

carefully and thoughtfully instituted in the fall of the year when the first scourge starts, much illness and loss of time might be prevented. This is a measure which all industries should study earnestly.

VENEREAL DISEASES

With regard to venereal diseases, industry should heartily cooperate with agencies now conducting a campaign against them. In many communities very thoroughgoing programs are being followed. Education by way of bulletins, pamphlets, lectures and movies is advisable. Employees should be made to feel that both syphilis and gonorrhea should be dealt with like other diseases, and in communities where a venereal disease clinic does not exist, arrangements should be made to treat all such cases properly. Employees should not be discharged or laid off as a penalty when it is discovered that they have such diseases. They should know that they can be taken care of in a proper way by a reliable physician, and that their job is secure. If this attitude is not taken they will not come to us, but will continue at work, perhaps only partially treated and without knowing the proper precautions to take for the protection of others. By a proper attitude of helpfulness, they will readily seek our assistance and heed advice, and industrial communities will be much less harmed than if we go on in our previous unsympathetic manner.

OTHER DISEASES

Finally, what of those conditions or impairments not communicable diseases in the strict sense, but which to such a large extent continually sap the vitality of industry? In my own company it is estimated that last year ten and one half days for each employee were lost because of sickness, and I believe it is safe to say that a very large proportion of that lost time can be attributed to such things as colds

and their sequelae, focal infections of teeth, tonsils, sinuses, gallbladder, etc., together with the resulting conditions from dietary indiscretions and lack of proper exercise.

Adhering to the definition of industrial epidemiology that was given in the beginning, I am permitted, I believe, to rate such states of lowered vitality as belonging to the subject under discussion. I feel that, aside from etiologic considerations, they occur frequently enough and are of such moment to the well-being of industry that their prevention and control may be considered in relation to the prevention and control of the more often discussed communicable diseases.

Time does not permit of a complete discourse on this part of the subject, and in closing I can only draw your attention to what seems to me, for the present, to be the best method of practical prevention in industry of these conditions. I believe, first, last and always in the efficacy of a real physical examination, both at the time of entrance to employment and later, at stated intervals, which will, among other things, give an analysis of individual capabilities and susceptibilities, placing workers where they will not endanger their well-being through lowered resistance or uncorrected impairments. If epidemiology along these lines, or any other, is to mean anything, thoroughgoing physical examinations, the best working conditions, and health education are the three fields open to our cultivation if we would reap a harvest.

343 State Street.

ABSTRACT OF DISCUSSION

Dr. A. C. Chace, Texarkana, Ark.: The United States Railroad Administration has entered into contract with the shop crafts by which not only is all physical examination prohibited, but no one is permitted to inquire whether or not a man who enters the railroad shops has tuberculosis, diphtheria, smallpox or any other contagious or infectious disease.

You must hire him if he comes to you and the position is open, and if he has learned his trade, no matter what disease he has, no matter how contagious his disease may be.

I would like to present a resolution, and I move its adoption:

Resolved, **That the Section on Preventive Medicine and Public Health condemns the contract entered into by the United States Railroad Administration with the shop crafts, whereby physical examination of applicants for employment is prohibited, and that it recommends to the House of Delegates the adoption of some resolution condemning in terms that cannot be mistaken the entering into of a contract with any labor organization prohibiting physical examination.**

Dr. John P. Davin, New York: This is a very serious problem for this section to undertake. It is flying both in the face of the United States Government and in the face of the labor organizations. I do not think the labor men have arrived at the period when they should be compelled to be examined physically in order to earn their living. Any man coming from a source of infection, or any man known to have an infection, ought to be looked after. But to ask that the laboring man must sustain a physical examination is taking a tremendous step. Labor men are well within their rights in refusing to have any such contract for the sake of an imaginary protection on the part of themselves from those of their fellows who may be ill. The American Federation of Labor has done a great deal for the workers. And I think it will have a bad effect on the working men if they find that the American Medical Association has given its approval to what is a compulsory examination of a working man. A man's body has some rights, as well as his soul. When this government was established it was prohibited from interfering with the practice of any religion or the exercise thereof. It was never even supposed that any one would have to be prohibited from practicing medicine. But it looks to me as if we are rapidly approaching a condition where a state is going to take care of a man's body in lieu of his soul, and the endeavor is being made to reach his soul by ministering to his body. It would be ill advised for this association to go on record as voicing its opinion that the laboring man should have to be subjected to a strict physical examination, baring himself before his employer before he has a right to earn his daily wage.

Dr. James R. Bean, Birmingham, Ala.: If I understood Dr. Sawyer correctly, he advised compulsory culturing of immediate contacts of a case of diphtheria, and the administration of an immunizing dose of antitoxin. I believe the contacts should be cultured, but I do not believe that the administration of an immunizing dose of antitoxin is good practice today; because of the danger of anaphylaxis to that person should he develop diphtheria, or need other serum therapy later. Of course, the production of antitoxic serum

today is so refined that the danger is minimized, yet that point must be borne in mind. If they want to take steps to immunize these people, give them toxin-antitoxin mixture. I also think that an industrial plant is one of the best places in which to use the Schick test, because the men are under control all the time. It is more advisable to find the non-immunes and immunize them rather than all the contacts. In reference to the administration of typhoid vaccine, I believe absolutely in the efficacy of typhoid vaccination; yet my experience in France led me to believe that there were times when a massive infection could overcome this immunization. This was illustrated in one outfit which started from Camp Cody, and when it arrived in France more than 50 per cent. of the men were sick with typhoid fever. Of the 250 men who finally arrived in our area more than 80 per cent. had had three complete courses of immunization. I have never seen typhoid fever in as virulent a form as it occurred in those men. Typhoid vaccination, without proper attention to the sanitary conditions surrounding the patients or the families exposed, and an epidemiologic study of the milk and water supplies, is almost useless.

Dr. S. W. Welch, Montgomery, Ala: I do not understand that these medical examinations of working men are entirely for the protection of their fellows. The principal protection comes to the man with the ailment. One of the chief values of the examination is to find in their incipiency those defects which, if discovered in time, can be relieved, and which, if neglected, lead not only to the death of the man affected, but mean pauperism to his family. Incidentally, he is removed from his fellows, and they and their families are protected. But it should not be forgotten that larger benefits come to the individual and to his family as well.

Dr. W. A. Sawyer, Rochester, N. Y.: The greatest value of physical examination is to the individual himself. I have never yet met a man who has objected to a physical examination whom I could not examine eventually. I understand on reliable authority that the right of an employer to ask for a physical examination before employment played an important part in the recent steel strike in Pennsylvania.

THE REPORTING OF VENEREAL DISEASES BY PHYSICIANS

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NEW ORLEANS

Every innovation in medicine has been either preceded or followed by an educational campaign among both the public (the laity) and physicians. Medical progress must be made by acquainting the general public with medical facts. Too long have physicians kept their medical knowledge within their own sphere, expecting the laity to gather their medical education in the stern school of disease experience, leaving the public helpless except for minatory lectures in preventive medicine. The public mind is analogous to the child's mind: Not only must both be told to do a thing, but both demand the whys and wherefores of the thing to be done. Sustained preventive medicine will never come to pass until every child, man and woman knows the immense economic and material reasons for prophylactic medicine.

One can readily understand why a great deal of energy must be expended to acquaint the public with some departure from the routine in medicine. The average person is not presumed to know the needs of medicine at any given time. But it is difficult to appreciate why the same laborious process must be gone through with physicians. Surely it is expected of them to recognize the demands of the various evolutionary periods that go to make ultimately the history of medicine. Yet it is a fact, and any state health officer will verify the statement, that a great deal of the time of

the vital statistics bureau of a state health department is taken up in an attempt to get physicians to write legibly and give reasonable causes for death; or, on the other hand, an expert statistician's time is devoted to doing propaganda work to convince physicians that birth records are a necessity in these modern days of statistical accuracy. In returning death reports to physicians for proper revision, and in a multiplicity of other tasks growing out of the carelessness and negligence of physicians who, in making their reports, do not give the subject the ordinary care that a subject of this kind merits, is the energy and money of this important branch of health activity dissipated.

When we transfer our investigations from the vital statistics bureau to the epidemiology department, the sins of omission and commission increase in a ratio directly proportional to what the physician thinks is an invasion of the rights or privileges of either the patients under his care or of himself.

Only a few years ago it became obligatory on the physician to report tuberculosis as a communicable disease. Despite the law, contrary to all medical knowledge, opposed to the conscientious convictions of the medical practitioner himself, nevertheless an educational campaign had to be conducted among physicians to teach them what they already knew: that tuberculosis is a communicable disease; that there is only one way to control it, and that is for the health officials to know where and to what degree it exists.

State and city boards of health need a law enforcement division for physicians, rather than an educational department. The physician *knows;* he simply does not consider the reporting of communicable diseases a part of his professional duties; and until such time when he is punished for law violations the same as any other individual, until such time as he is impressed with license revocations varying in time with the degree of his offense, not until then will reporting of disease reach any degree of accuracy.

One or two prosecutions of this kind in a community, with ample publicity, will produce more communicable disease reports in a week than will years of propaganda.

Recently, in the state of Louisiana, there were found in one small community forty cases of typhoid fever, not one of which had ever been reported. Did any of the physicians attending these cases feel that from a legal and moral standpoint they were criminally liable for this epidemic? Did they feel that they were grossly negligent of a duty they owed their community, their state and the nation? Were they prosecuted? And, above all, will they not do precisely the same thing at some future time?

Much of this sounds like scolding. It is not. It is a frank appeal for state health officers to hold in strict accountability every licensed physician to a trust that the state has imposed on him. A man is readily punished for violation of a traffic ordinance because he endangers the life of a few persons. The physician has under his thumb the lives of whole communities, and he should not be permitted to violate this trust and responsibility.

Laxness and negligence being true in the reporting of those diseases that have been reportable in the past, it can readily be surmised how much more difficult it is to get reports on diseases recently added to the list of communicable diseases. The problem begins to get more complicated when the physician attempts to shield certain classes of his patients; or, in a more mercenary type of physician that is occasionally encountered, when he attempts to enlarge his clientele by circulating among the laity the information that he does not report certain diseases. I refer to the venereal disease triad. I can think of nothing more contemptible than to compete unfairly on such a basis with a fellow practitioner who reports his venereal disease cases. Equally unfair is the physician who thinks he

shields wealthy patients by not reporting their venereal disease when, at the same time, he painstakingly reports those not so fortunately situated.

There can be no question that there are physicians who are conscientious objectors to venereal disease reporting. Nevertheless, in this state (Louisiana) they violate the law every time they do not report. Their recourse is in a court of justice. They have no more right to interpret the law, no more justification for violating it, than they have for ignoring any other law. Yet it is only just that an answer should be made to those objections that superficially appear legitimate; and I will discuss them in the order of their importance.

INVALIDITY OF OBJECTIONS TO THE REPORTING OF VENEREAL DISEASES

It is contended that the reporting of venereal diseases in a patient not only violates the individual right of the person to conceal his malady from his fellow man, but also contravenes the established principle of privileged communications between the physician and his patient. This argument has no merit in point of law or in any ethical code. The courts have invariably ruled to the contrary, in the first instance; and our social structure is based on a philosophy diametrically opposed, in the second. No system of government could long endure if it were based on any other principle than that the right of the individual is always subservient to that of the mass. Any other creed spells rank individualism, and individualism carried to its logical conclusion means nothing more nor less than anarchy. In any system of ethics a right implies a duty. The physician's *right* to practice medicine by virtue of a license issued him by the state, protecting him in the exclusive privilege of healing the sick and shielding the well, implies a *duty* and an allegiance to the creator of that self-same right; and all other ethical ties to individuals or groups of individuals are insig-

nificant when compared to the loyalty and protection demanded by the great social structure whose existence is always threatened, and whose efficiency is always impaired, by bacterial invasion. Every physician is a state officer, a public health officer, commissioned and protected by the state, and in this day and age not only is it his privilege to heal the sick, but it is his absolute duty to shield the well. He who practices today only the healing art, and leaves out of his medical armamentarium preventive medical science, is very poorly equipped. An individual has no rights that conflict with society's interests. In other words, an infected person's rights cease where community protection begins.

Again, we meet the argument that the reporting of venereal disease must inevitably result in blackmail, scandal and various other social calamities that are presumed to make the health officer shudder over the dire effects of his pernicious meddling in communicable diseases. Physicians have tried to be serious in explaining that the reason they did not report was the fear of being shot, prosecuted for libel, charged with malpractice, and what not. Their argument was always to bolster up something that they originally did not intend to do. As a matter of fact, Ohio has obtained the second largest number of venereal reports in the United States, and the cases there are reported by name and street number. Certainly, in most states where the reporting is done by some cipher code, all of these objections must perforce be groundless. But the point of the matter is, that even when the patients are reported by their names, no such catastrophes have taken place. At the risk of repetition and reiteration, may I again call your attention to the fact that the courts of the country have invariably upheld the venereal disease laws; and the responsibility is theirs, and not ours.

We are also admonished by the profession to have a care in enforcing venereal disease reporting in

infected married men, lest their wives come into possession of the data, and domestic turmoil and tragedy result. Nowhere has the medical profession shown its lack of keeping up with modern economics and politics so much as by attempting to protect their own sex at the expense of helpless women and children. Why this maudlin sympathy for the venereally infected married man? You who have been struck with horror when your male syphilitic, in exceptional instances, acquired his disease from his wife: What about the hundreds of thousands of venereally diseased women who have conjugally acquired their maladies? What about the children who have innocently gone down in the struggle? Is it because you believe that men have a right to arrogate to themselves sexual privileges that they will not give, or is it because you are a man, and that despite the handwriting on the wall you cannot overcome the prejudices of ages for men to repudiate the very sex that gave them birth. If these reports are to cause domestic discord; if the wife should through this system of reporting find that her husband is venereally diseased; if the fiancée of some venereally diseased man should by the remotest chance discover the true health status of her prospective husband—all of which I deny is at all probable under the reporting system in use—I ask you, not as physicians, not as scientists, not as sociologists, but as plain, reasonable men, were it not better that she have this information before she is infected than to have it thrust on her in the clinic, in the hospital, or on the other side of the river Jordan?

May I suggest to the profession to prospect just a bit. Would it not be well to anticipate woman's coming political power and, medically at least, give her the protection that each one of us expects legally for ourselves? Shall we, who are presumed to represent all that is humane and ideal in science, be pushed or shall we pull?

BENEFITS FROM REPORTING

If, then, there are no valid objections to the reporting of venereal disease, there ought to be positive benefits derived from reporting if the physician is asked for his cooperation. In the first place, statistical data on venereal disease are urgently necessary. We ought to know our rate of infection. We should be thoroughly acquainted with the geographic distribution of venereal disease so that intensive work can be done in those heavily infected areas. We must have data of an accurate kind if we are to go before legislative bodies and civil communities to ask for funds. Some of the men engaged in this propaganda work have met with a peculiar situation; namely, they cannot get appropriations without statistical data, and they cannot get the data without funds to enforce the obvious duty of the physicians to report. Truly, a vicious circle.

Another important value in reporting is the recording of the patient so that he can be under surveillance in the event that he absconds from treatment. We have in this city returned for treatment in one clinic as many as twenty-seven patients in one day by threatening to placard their houses. We all know that much of the dissemination of the venereal diseases is due to inadequate treatment. With the abatement in their symptoms comes an indifference to ultimate cure, and it is only through a proper follow-up system that these patients can be compelled to remain in the physician's care until they are at least noninfectious.

Here in Louisiana we have on our report card a space for the reporting of the infector's name and address. Some physicians help greatly in acquiring this information. In most instances, I believe, it may be obtained from the patient if the physician will take the trouble to ascertain it. The patient's trauma is invariably mental as well as physical. If for no other reason than having his exalted ego wounded in mis-

placed confidence in his sexual selection, he will, by judicious questioning, reveal the source of his infection.

Where the state venereal disease laws are at all adequate, such an infector can readily be corralled. In the case of prostitutes, immediate action is imperative. The detention of a syphilitic prostitute militates against community syphilis to a degree few physicians realize. We have sent prostitutes to the State Detention Hospital from remote parts of the state on telegraphic order immediately on the receipt of a report card from a physician stating that this or that person had infected his patient.

CONCLUSION

Let us remember as physicians that we have no right, legal, moral or ethical, to violate a law. The venereal disease laws of the various states can accomplish results inestimable, but they are all based on the recording of the cases. This must be done by the practitioner. He will do it gladly, if he is true to himself and his community interests. He will do it by compulsion, if necessary. The time has passed when the state health officials should be expected to conduct educational campaigns among physicians. Neither the time, the money nor the patience is available to be wasted in persuasion when the offender is obviously negligent. The physician can be detected readily who evades reporting. He is not at all secure in the secret connivance with his patient. The laboratory diagnostician offers an excellent record of the practitioner's clientele of syphilitics; and the druggists' prescription files are an ideal place to dig out the protected patient with gonorrhea. But why should we be compelled to prosecute the very men who ought to give us aid?

ABSTRACT OF DISCUSSION

Dr. Oscar Dowling, New Orleans: We have been unable to get the doctors of Louisiana to report their cases, even by numbers. They certainly ought not to be afraid of sending

in a report with say "Number 16" as a case of gonorrhea, or "Number 76" as a case of syphilis, or "Number 87" as a case of chancroid. It is more important to have a case of gonorrhea or a case of syphilis reported than to have reported a case of smallpox or a case of leprosy or a case of diphtheria. A man suffering from a venereal disease is allowed to be at liberty. On the other hand, a woman who has the same disease can be confined in the isolation hospital in New Orleans. I do not recall more than one or two men who have been arrested and confined because they had a venereal disease. If it is necessary to confine the women, it is necessary to confine the men. I do not believe in two standards of morality, and I do not believe in two sets of laws for the treatment of these cases. I do not believe in a law which says that woman shall do one thing and a man shall not, or that a man can do one thing and a woman can not. If we can receive from you some suggestion or some plan whereby we can bring about the reporting of these cases, and whereby we can have them treated and cured, we shall be grateful.

Dr. A. C. Chace, Texarkana, Ark.: I wonder if you would be able to sleep when you leave New Orleans in your sleeper, if you knew that the train dispatcher, who is dispatching your train from one telegraph station to the next, had incipient paresis? And yet that happens. It was a feeling of duty toward the public which led the railroads with which I am connected to install what is termed a complete—although it is really incomplete—venereal service, and it is the only venereal service on any railroad in the world, so far as I know. After two years of practical experience with that service, certain points have been brought out that I think will answer, in a slight degree, what Dr. Dowling has asked about. Pennsylvania has seceded from the public health program on venereal disease. Dr. Martin has taken the stand that venereal diseases cannot be made reportable at present because the medical profession will not report them, and he does not believe in putting a rule on the statute books which cannot be enforced. If dangerously communicable diseases, diseases which are the most widely distributed among human beings of any communicable disease, are not reportable, then what diseases are reportable? On the other hand, the U. S. Public Health Service, which has done all that any one could ask for in the way of cooperation, is not using what is admitted to be one of the greatest weapons in this work, and that is the prophylactic or early treatment of venereal diseases. If we have a weapon which is effective in this work, why not use it? The answer, of course, is that churches and certain moralists are against it. I do not believe that is true, however. Dr. Martin has proved that it is not true, because he has put it through in Pennsylvania, and there has not been one single word of criticism from any one of nine million people. In regard to the question of not reporting venereal diseases, here

is the only way—to prosecute the physician. It has come to that in every other state in regard to other communicable diseases, and it will have to come in regard to venereal diseases.

Dr. W. D. Calvin, Fort Wayne, Ind.: This paper emphasizes the need of a high central power, directly under the control of a national secretary of health. Then we will have efficiency. The attitude of Pennsylvania is directly attributable to this lack of central power. The fact that physicians in Louisiana are not reporting venereal cases is also due to the same lack of control. If it was a federal proposition, they would report their cases. It has been said by good authority that 8 per cent. of our population is syphilitic. The doctor who states that he has no venereal diseases, he has no syphilis in his practice, is blind, does not recognize that it exists. You cannot go anywhere and fail to see it. It is found everywhere. It is no respecter of persons. If it is true that 8 per cent. of the people of this country are syphilitic, then we have approximately one hundred syphilitics for every physician in the United States. Two propositions present themselves in regard to this question: The first is the general practitioner's inability to diagnose syphilis, and the second is the lack of ability to treat it. Dr. Edler's statements in regard to the ambulatory clinic and free clinics is in itself a condemnation and censure of all men who do not know how to treat venereal diseases. The United States government, in the free clinics, is doing great work, and doing it better than it is done by the average physician. The educational proposition is most important. Every medical man ought to be willing to go out among the people with whom he lives and instruct them in regard to the dangers of venereal disease. It is by instruction given to the next generation that we will in large part assist in the eradication of these conditions.

We should at least report these cases to our state. There is some objection to making the reports locally, in certain places. You cannot quarantine cases of influenza because there is no law under which to report the cases. The same is true with regard to venereal disease.

Dr. Milton Board, Louisville, Ky.: A few days ago I was in the office of a specialist in our city who advised me that in the judgment of himself and his associates 60 per cent. of the cases of venereal disease were referred cases. If that be true, this is very largely a problem for the general practitioner, for the family doctor. If 60 per cent., or even half the cases which go to the specialists in the large cities are referred, then it follows naturally that practically all the cases in rural communities, and in smaller cities, are to be treated, and as a matter of fact are treated, by the general practitioner. The responsibility for the solution of this great civic problem rests on the shoulders of the American doctors.

If we are to succeed we must have the conscientious support of the family doctor and not his antagonism. In Kentucky we have adopted two slogans. We print them in our literature, and we try to inculcate these principles in the minds of our people. First, we deny that venereal disease is a private affair between physician and patient. We claim that being infectious and communicable, it is a matter of public concern. Therefore, it should be handled as are other infectious and communicable diseases. Second, we deny that any individual with venereal disease has the right to infect any other person. We have put those principles into organic law of our state. Our state board of health is given wide power so long as it does not abuse this power. Our courts have done remarkably well in upholding our health officers in the wise and just enforcement of the law. Recently the legislature enacted a law creating a bureau of venereal diseases. We go further than that. We have the different towns and cities take action along these lines. The whole proposition resolves itself into the question of enforcement of the law. I agree with Dr. Calvin. The success of the federal law in this country is not the severity of the punishment, but the certainty of the punishment. If we are to get anywhere, the doctors must report these cases, and they must become missionaries in the cause. They must advise their patients of the danger they are to the community, and that if they do not keep within the law, if they do not refrain from spreading the disease, they will be put in quarantine. In our state full power is given for the quarantining of both males and females. Oklahoma sent a man to the penitentiary for five years for infecting a woman with syphilis. Every state should have that kind of a law.

Dr. Hardie R. Hays, Jackson, Miss.: Ninety-four per cent. of the doctors of Mississippi presented morbidity reports on venereal diseases in 1919, but only a very small number gave us clinical reports. I wrote to the physicians of the state and asked them whether they were willing to give the doctors of the future some statistics by which they might see what was being done in solving the present-day problem of venereal diseases. I got quite a response to that circular letter, but some doctors did not even read the letter. In the next circular letter I told the physicians that if they did not read the literature which was being sent them under separate cover, the laity would soon be better informed on this progressive work than they were. This letter produced a great deal of interest, and a large percentage of the physicians of the state became interested in the campaign. As to the use of prophylaxis: In our "Keeping Fit" campaign we tried to impress the boy that continence is rewarded with the highest physical and mental development. We cannot put prophylaxis on any basis which will be consistent with that plan of teaching. Women are going more actively into every phase

of human endeavor. They work side by side with men; they are going to vote; they are going into every phase of life on the same footing as men and they have the same right to be immoral as men have. We must take the stand that there is only one standard of morals. We men must raise our standard of living so that the standard of womanhood will not have to degenerate to reach the single standard which is here to stay and must be adopted. If we advocate prophylaxis and encourage its use we will say to the world that we cannot raise the standard of morals in our people. I believe in teaching continence. It is the only teaching founded on the truth and that will finally lead man to the highest civilization. Doctors must demand a higher standard in their ranks and in their teaching.

Dr. H. F. White, Washington, D. C.: Our present campaign is divided into three phases which we considered essential in combating this disease: the medical, the educational and the legal. We feel that it is necessary to attack this problem from those three sides in order to control venereal disease. We believe from our investigations that many of those who spread this disease are mentally deficient. When such people are found they should be institutionalized. Those of a low grade of development should be kept permanently segregated; those of higher grade should remain until such time as they can take their place in society. That applies equally to both sexes. We have also learned that it will be necessary in the future to provide some logical, well-arranged plan of systematic sex education, beginning in the cradle, if necessary, and continuing at least through the premarital age. We must see to it that those who are suffering from this disease are given proper medical attention. Much has been said in reference to the value of prophylaxis and the need for it. The Public Health Service has investigated the subject very seriously, and during the war prophylaxis was tried out very extensively in the service. But from the studies we have made, and from what we are able to find out, we cannot endorse prophylaxis as being as valuable as the term would suggest. We found that the army, with the strongest military discipline, with punishment inflicted on any one who failed to live up to regulations, was only 50 per cent. efficient. Of course, there is also a moral question which we respect. We would rather have cooperation than dissension. But our principal reason for not talking about prophylaxis is because we do not believe it to be as efficient as it has been represented to be in the past.

Dr. William Edler, New Orleans: A doctor told me that a prostitute had come to his office with a florid syphilis. The doctor told her she ought to have medication; that it would cost $25 for a dose of arsphenamin. She said she did not have the money and left the office. Two days later she

returned and laid twenty-five one dollar bills on his desk. Their source was evident. The doctor did not report that case to the city board of health, nor did he retain that woman in his office until the health officer could get her. That physician was a criminal, in my opinion, and should be prosecuted as such. If I were the head of that department of health and had the power I would revoke his license for a period of time. That is my whole interpretation of a venereal disease reporting campaign. It is not to beg doctors to report, but to go out and prosecute and show them that they must not violate the law.

LESSONS TAUGHT BY MEASURES FOR CONTROL OF VENEREAL DISEASES

SUGGESTIONS FOR THE FUTURE

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A little more than two years ago, the Public Health Service actively entered on a program of cooperating with state boards of health to control the spread of venereal diseases, an important phase of public health work. Many papers by various health officers have discussed the measures now actually in operation in forty-seven states cooperating with the Public Health Service in this work, and therefore no attempt will be made to outline again the methods.

After trying to prevent the spread of gonorrhea and syphilis according to a prearranged plan, many lessons have been learned from experience, and as a result of this experience suggestions for the future have been impressed on those responsible for the inauguration and continuation of venereal disease control measures.

From a study of the work during the last two years, certain lessons may be briefly stated. Each of these separate lessons, however, includes many subdivisions, and the principal ones will be mentioned for the purpose of inviting consideration, comment and criticism.

1. It is absolutely essential that a three-phase program be carried on for the successful control of venereal diseases. The three phases of the work are: medical, legal and educational.

2. More attention must be paid to *preventing* infection.

3. There must be devised and inaugurated a comprehensive, constructive, practical plan for sex education so that the method can be applied in schools, beginning in the early grades and continuing through high school and college.

In discussing the details of these statements it is impossible to separate the discussion of the various phases of the work into clearly defined classifications, as each of the topics mentioned is intimately related to the general problem.

MEDICAL MEASURES

Every phase of public health work is primarily a medical question; but to carry out any plan for increasing health efficiency, much work of a nonmedical character must be done. In the case of venereal diseases we are dealing with a group of dangerous, communicable diseases, the causative organisms of which are known. The method of spread is well defined; and for syphilis, treatment is practically specific medication. Therefore, if it were possible to bring every infected person promptly under efficient treatment, continued until patients were cured, it would be possible entirely to eliminate these diseases in the course of a comparatively brief period. It is obvious, however, that such an accomplishment is impossible, and therefore the prevention of venereal disease must necessarily include measures other than medical.

LEGAL MEASURES

At the present time legal measures are of paramount importance. The term "legal measures" is used in a very comprehensive way, and includes many phases of the work now being undertaken by the Public Health Service and state boards of health for venereal disease control. Legal measures are of two separate types: legislative and administrative. The state legislatures

and city councils should be asked to make appropriations for venereal disease control work; to declare it unlawful for infected persons to expose others to infection; to require the reporting of venereal diseases by physicians and others to the state health authorities; to require physicians to give venereal disease patients printed instructions setting forth proper procedure to avoid the spread of infection, and to prohibit the advertisement and sale of nostrums for the self-treatment of venereal diseases. The passage of such laws is only the first step in the program. The administration of the law, requiring that laws be observed, is the work that accomplishes results.

Almost all states now have some of these laws, but the enforcement of the laws is not usually carried on in an energetic manner. Much could be accomplished toward obtaining an accurate knowledge of the number of persons infected with venereal diseases and of the precautions that are being taken to prevent the spread of infection if the law requiring the reporting of venereal diseases was energetically enforced.

Many states are making an earnest effort to secure complete reports from physicians treating venereal diseases, while great laxity exists in other communities. This laxity and the indifference assumed by many physicians is a matter of much concern to health officers interested in preventing the spread of venereal diseases. If the state board of health has knowledge of the venereal disease rates, it becomes possible to interest officials responsible for appropriations by making known the actual facts. Reporting venereal diseases has not caused the objections predicted by opponents of laws requiring reporting. There is no evidence to show that infected persons neglect treatment because a report of their case is required. Reporting provides a stimulus for the patient to continue under treatment until danger of infection is over. Another useful result of reporting has been

that in many instances the sources of infection become known; and by proper action such sources can be prevented from further spreading disease, and infected persons thus discovered can be required to undergo proper care and treatment.

Laws in regard to the control of conditions that favor the spread of venereal disease are essential and, as in the case of the law requiring the reporting of venereal diseases, the enforcement of the law is of vastly more importance than its passage.

This phase of venereal disease control work is the one that usually provokes much discussion, for the reason that many believe that to suppress conditions favorable to the spread of venereal diseases is a moral, economic and social problem rather than a problem for the health officer. A health official, however, must adopt measures to eliminate potential foci of disease. No progress would have been made in the control of yellow fever and malaria if the efforts of sanitarians had been limited to isolating and treating infected persons. When the breeding places of the carriers of these diseases were destroyed, control measures were successful.

This comparison is promptly answered with the statement that insect carriers of disease transmit malaria and yellow fever, but that only the human host spreads venereal disease. Correcting the environment of the human foci of venereal disease spread is avoiding disease at its source. It is not necessary to destroy the carriers of venereal disease; but they certainly should be kept under observation and their conduct regulated. All precautionary measures must fail unless adequate control regulations are consistently enforced.

Early in the development of routine venereal disease control work, practically all officials agreed that health officers had a definite responsibility for setting in motion the usual legal procedure of the state to sup-

press conditions that favor the spread of venereal infections. In the "Suggestions for State Board of Health Regulations for the Prevention of Venereal Diseases," issued March 29, 1918, Rule 8 reads as follows:

> Prostitution to be repressed.—Prostitution is hereby declared to be a prolific source of syphilis, gonorrhea and chancroid, and the repression of prostitution is declared to be a *public health measure.* All local and state health officers should, therefore, cooperate with the proper officials whose duty it is to enforce laws directed against prostitution, and otherwise to use every proper means for the repression of prostitution.

Repression of prostitution was thereby recognized primarily as a *public health measure,* and not as a social and moral problem in which the health officer had only an academic interest.

The legal program for venereal disease control must, however, give equal treatment to the two sexes. Laws enforced to control only infected females justly cause opposition if the male carrier of venereal disease is entirely neglected. It is not impossible to require that all infected persons conduct themselves so as to lessen the danger of the spread of their infection to others. This can often be accomplished by the physician in charge of cases explaining the necessity for care and requiring that certain precautions be observed. For this method of control to become effective, the indifference of many physicians must be overcome. Every physician has a very definite civic duty to perform in addition to his professional duty toward a patient infected with a dangerous communicable disease. No physician has met his responsibilities for the protection of the public health when he dismisses with a prescription a patient suffering with gonorrhea or syphilis. He must insist that such patients report frequently for continued observation and treatment. Unless he makes some effort to see that precautions are being observed to prevent others from acquiring the infection, he has failed to meet his responsibility as a citizen.

In fact, physicians should regard venereal disease control regulations as a special opportunity for the promotion of preventive medicine. Without these regulations the conscientious physician is helpless when he knows that one of his patients is spreading venereal disease. He can only warn the patient that indulging in sex relations will delay successful treatment. He has no authority to direct the infected person to conduct himself so as not to menace his associates. Under existing laws in almost all states it is now possible for a physician to compel his patient to remain under treatment and to refrain from exposing others to infection, by citing the authority of the state board of health to isolate or quarantine infected persons who do not observe precautions to prevent the spread of their infection to others.

More attention must also be given to the control of travel of venereal disease patients. There is ample legal authority for this procedure, it being specifically stated in the Chamberlain-Kahn bill that one of the duties of the Division of Venereal Diseases of the Public Health Service was "to control and prevent the spread of these diseases in interstate traffic."

To carry out this duty the secretary of the treasury promulgated Amendment 7 to the interstate quarantine regulations, prohibiting the travel of persons infected with venereal diseases, except under certain restrictions that are described. Moreover, the state boards of health in forty-seven states have specifically agreed that "the travel of venereally infected persons within the state is to be controlled by state boards of health by definite regulations that will conform in general to the interstate regulations." Enforcement of the interstate and intrastate requirements for travel of infective patients will lessen the dangers of spread of gonorrhea and syphilis.

Interest in these phases of the work—reporting, control of cases, and regulating travel—will develop

more effective measures for *preventing* the spread of venereal infections.

There is another part of the present program that requires much thought, definite agreement and appropriate action, and that is the treatment of prostitutes. In many cities it has been customary to apprehend women guilty of commercialized sex offenses, and punish them with a small fine or warn them to leave the city. Women so treated almost invariably return to their former avocation and continue to be sources from which venereal infections are acquired.

The remedy for this condition is to apply mental hygiene measures. All psychiatrists that have made studies of groups of prostitutes have shown by their reports that a very high percentage of such women are feebleminded or of abnormal mentality. If women practicing frequent promiscuous sex relations and spreading venereal infections are usually mentally deficient, might we not find that men who habitually and frequently indulge in sex relations, acquire venereal infections and spread the infection to others through careless and criminal negligence are also below par mentally? Male carriers of venereal infections should not be relieved of the acute symptoms and permitted to resume relations which tend to create additional foci of venereal infections just because they are men and not women. Mentally deficient men and women infected with venereal diseases should be committed to institutional care, and their physical rehabilitation accomplished. If their mental condition is such that they cannot safely be returned to society, they should be kept under supervision. The objection made to this procedure is that large appropriations would be required to provide for the care, treatment and rehabilitation of infected persons that are exposing others to infection. The amount it would cost to provide such institutional care is very much less than the loss now caused by venereal disease spread through neglecting the responsibility of caring for such persons.

EDUCATIONAL MEASURES

The educational measures contemplated by the present program are intended to reduce the problem in the future. It is illogical to continue indefinitely giving information to adults which will enable them to avoid infections, when the same result can best be accomplished by training children to live by rules of conduct that are designed to increase physical fitness and to enable them later on to control their exposure to infection.

The need for a well planned, constructive method of giving sex education is obvious to all who have given consideration to this subject. To discuss the question of sex education for children usually invites criticism; but the only way this question can be clarified is by discussion and the forming of definite conclusions.

There is a growing realization of the necessity for deciding on a plan that can be safely followed in the schools, whereby the next generation will be better prepared to meet the problems of sex relations than have adults of this age. The former policy of omission of all reference to reproduction of the species has proved to be fallacious and vicious. Parents should realize that they have not the choice of whether or not their children shall receive knowledge of sexual matters, but have only the choice of whether this knowledge shall come through proper channels or whether it shall be gained surreptitiously through information, often demoralizing, proffered by companions.

This question has been given a great deal of thought by educators, and it is believed that the consensus at present is that sex education should begin early and that the child should be led gradually through facts of reproduction in lower forms of life to an understanding of reproduction in human beings. Then would naturally follow instruction in regard to the nature of venereal diseases and methods of avoiding exposure to these dangerous communicable diseases.

Sex instruction in schools should never be given as a separate series of lectures or courses, but should be made a part of other studies. Sex knowledge should be part of physiology, biology, physical education, sociology, domestic sciences, even of history and literature, so that children will acquire the right attitude toward sex problems in an unconscious manner. There is certainly no short cut to knowledge in this field, and more harm than good will result from talks on sex matters given by poorly equipped teachers or lecturers as a special feature of class work.

It should be possible and practicable to devise a method of sex instruction whereby the ideas of the most advanced psychologists and educators could be presented by means of motion pictures. This visual method approaches as nearly as possible the natural way in which a child absorbs knowledge, and removes largely the difficult question of the qualification of a teacher. Material for the films for this purpose should, of course, be very carefully selected by a group of psychologists, educators, physicians and parents; and the entire series of films dealing with this subject should be reduced to scenario form and approved by authorities in the field of medicine and education before the preparation of the series is commenced. This of necessity will take much time, and is not a part of the program that should be rushed to an unhappy result. The series should form a sequence of instruction from the time the child enters kindergarten until he leaves high school. Subsequent instruction in colleges and universities may be given by lectures and conferences, and after leaving college the educational facilities of the various state bureaus of venereal disease would be available to meet arising needs.

SUGGESTIONS FOR THE FUTURE

1. Closer cooperation should be developed between the state boards of health and the Public Health Service, and between state boards of health and local health

officers to encourage a uniform method of venereal disease control throughout the United States. It adds much to the effectiveness of any public health work to adopt and put into practice a uniform procedure. Uniformity impresses the fact on those that come into contact with the work that definite knowledge is possessed by health authorities.

2. Health authorities should recognize the important part unofficial agencies may take in venereal disease control work if the activities of voluntary organizations are properly supervised.

The moral, social and economic phases of venereal disease control work can be materially advanced by organizations and citizens interested in these particular problems. The results so secured will reduce the burden of the control of venereal diseases now largely borne by health officials. This was the thought that prompted the inclusion in the agreement with state boards of health that they would "exert their efforts and influence for the organization of a state venereal disease committee that will be unofficial in character but a valuable cooperative agency for furthering the comprehensive plan for nation-wide venereal disease control." This plan has been utilized to some extent by certain state boards, but the full possibilities of these agencies have not been developed. Thought given to this particular question, followed by action, will greatly advance venereal disease control.

3. Progress will be materially advanced when the medical profession takes more interest in control of venereal diseases than it does at the present time. Members of the medical profession should naturally assume leadership in all plans for promoting public health, and there certainly is urgent need for every physician to renew and maintain his interest in all phases of the present program for venereal disease control. Every medical college should provide better facilities for preparing future physicians to have a

greater knowledge of the venereal diseases. Instruction given in medical colleges should not be confined to clinical medicine, diagnosis and treatment, but should include instruction in sociological and psychologic conditions affecting the spread of venereal disease.

4. There is need for a wider development of follow-up work in connection with treating persons infected with venereal diseases. Follow-up staffs should be a part of the personnel of every venereal disease clinic, and of the office of every venereal disease specialist. The duties of such a staff are to keep track of patients needing further treatment; to determine sources of infection; to see that precautions to prevent the spread of infections are being observed by patients; to discover other cases among the associates and members of the family of infected persons, and to carry on sociological and psychologic observations that will be of value in limiting the further spread of venereal infections.

5. The question of equal treatment of both male and female infected persons must be placed on a scientific and equitable basis. Nothing can be gained by a controversy as to whether or not infected women are a greater menace to the community than are infected men. *All* persons of either sex infected with either gonorrhea or syphilis are a very definite menace to the health of the community in which they reside; and unless infected individuals can be depended on to observe precautions to prevent the spread of their infection to others, they should be placed under either modified or absolute quarantine restrictions.

This does not mean that every young man who has gonorrhea must be withdrawn from employment and sent to a hospital for treatment; but it does mean that the physician in charge of every venereal disease case should impress on his patient the absolute necessity of following certain rules of conduct which will render it unlikely that the infection will spread to others. If

proper precautions are then not observed, the careless or criminal individual should be promptly reported by name to the state board of health. It then becomes the duty of the state health department to provide facilities for controlling such cases.

6. Careful and thoughtful consideration must be given by physicians, teachers, psychologists and intelligent parents to the question of deciding on the material to be used and the methods of applying instruction to questions of sex and venereal disease prevention.

CONCLUSION

There is no phase of public health work which is attended by greater difficulties and which presents so many various phases for consideration as does the problem of venereal disease control. Every one who has had actual experience in carrying on any part of the program has been greatly impressed with the tremendous scope and possibilities of the work and deeply realizes the necessity for not only continuing, but for greatly expanding the present plan of action.

It can be stated without qualification or doubt that the great mass of intelligent citizens of the United States are deeply interested in this problem and will give their unqualified support to health officers, physicians and others attempting to meet their responsibilities for preventing the spread of venereal diseases.

ORGANIZATION AND WORK OF THE DEPARTMENT OF HEALTH OF THE TENNESSEE COAL, IRON & RAILROAD COMPANY

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In recent years a new branch of the science of preventive medicine has been rapidly developed, which for want of a better term is usually called "industrial medicine," and much of value has been contributed to what was formerly the scanty literature of the subject.

An attempt will be made in this paper to bring to your attention very briefly an organization which is somewhat unique in its size and scope, but in order that it may be fully understood, a description of the industry is necessary.

The Tennessee Coal, Iron & Railroad Company, a subsidiary company of the United States Steel Corporation, is engaged in the operation of ore mines, coal mines, quarries, blast furnaces, steel mills and, through a subsidiary company, in ship and steel car manufacture. These mines and plants are distributed over a wide territory, though most of them are within a fifteen mile radius of Birmingham. Two operations, however, those at Mobile, Alabama, and Whitewell, Tennessee, are some 250 miles from this central point. Nearly 25,000 men are employed in all operations, about 60 per cent. of whom are negroes. A working force of this size represents, with the families of the employees, a population of close to 100,000 people. About 65 per cent. of these employees live in the cities, towns,

villages and countrysides contiguous to the various mines and works, in houses not owned by the company, and the remainder reside in villages which are owned entirely by the company.

The company owns and controls twenty-seven distinct villages, all of which are in close proximity to either mines or plants. Many of these villages were constructed a number of years ago, without much consideration being given to the type of houses built, or to the arrangement and location. In recent years, however, careful attention has been given to proper house construction and location, and a great deal of remodeling and rearranging has been done in the older villages. The houses of the modern villages are of three, four and five room types, with running water at every house and with ample ground space. Attention has been given to variation in type of construction and painting of houses. In addition to houses for employees, commissaries, bath houses, schools, churches and club houses have been built in practically all villages.

Up to about seven years ago, the sanitation of these various villages was handled in a general way by the local superintendents with labor forces taken from other work for the purpose, and the medical and surgical care of employees and their families was conducted by a number of physicians employed on what was known as the "contract" system. Each of these physicians worked in an independent way, without supervision from any central professional authority. The arrangement most generally in vogue was as follows: The company collected from each employee a monthly sum varying from seventy-five cents to one dollar a month. To this sum the company added an average of about thirty-five cents per man, monthly, to cover the handling of accident cases. The total collection was then turned over to the physician in charge, in return for which he was supposed to handle all cases

of injury or illness occurring to employees under his jurisdiction. In some instances the work was exceedingly well handled, but in other instances it was badly neglected.

Seven years ago a distinct department of the company was organized, known as the Department of Health, and a complete reorganization of the medical and sanitary work was begun, under my charge.

The Department of Health, as it now stands, is divided into three divisions, viz.: sanitary, medical and dental. Each of these divisions operates under a division chief, who in turn reports direct to the superintendent of the department.

MEDICAL DIVISION

The personnel of the medical division consists of fifty physicians employed on a straight salary basis for full time service.

For convenience in handling, this department is divided into twenty districts, each of which is under the charge of a district physician, who reports directly to the division head. The duties of these physicians embrace the following:

1. Physical examination of all applicants for employment.
2. Physical examination of all schoolchildren, and frequent inspection of the schools maintained by the company.
3. A close cooperation with the Sanitary Division in general health work.
4. The care of all sick and injured employees and their dependent families, without regard to the nature of the illness and whether or not injury was received in the line of duty.

Each district has a well equipped dispensary, which also serves as an emergency hospital. A nurse is employed at each dispensary, and equipment is provided for the handling of emergency work and for the diagnosis and treatment of routine dispensary cases.

A base hospital, of fine construction and location, with a capacity of 320 beds, has recently been completed by the company at a cost of over a million dollars, for the use of employees and their families. This hospital serves as a central point for the work of the Medical Division. This hospital is known as the "Employees' Hospital," and is equipped to handle any class of cases, except advanced tuberculosis. A unique feature in this part of the country is that negro patients are handled under exactly the same conditions as white patients, although, of course, segregation is rigidly practiced. Isolation sections in the hospital provide a means for the removal of communicable cases from the homes of employees, greatly simplifying village quarantine and lessening the grave danger of contact infection in the homes and villages.

An enormous amount of work is handled by the Medical Division, and the district physicians and assistants are constantly in touch with the community. The scope of organization enables the employee to have a much higher quality of service than he could otherwise secure, for the reason that facilities are provided for proper examinations of all kinds, for careful laboratory work, for the best of hospital attention, when necessary, and for consultation covering the various specialties. As this service is always on call without extra cost to the individual, ailments are more frequently discovered in their incipience than is the general rule, and many outbreaks of communicable diseases are thus prevented. As against this advantage, many unnecessary calls are made, but this trouble is gradually being eliminated under proper instructions and education. At present, an average of 200,000 dispensary treatments and 140,000 visits to the homes of employees are made by the district physicians and their assistants each year.

The expense of the Medical Division is borne partly by the company and partly by the employees through

a system of voluntary contribution to what is known as the Medical Fund. Under this system, any employee living within a certain radius of the works and mines, may request that he be placed on the "Medical List." The payment of $1.25 per month entitles each employee and his dependents to dispensary or home treatment, professional care in the Employees' Hospital, and necessary drugs and dressings. Ward treatment in the hospital is furnished at a charge of $1.25 per day to employees contributing to this fund. At present, practically all employees living in the zone of this service voluntarily avail themselves of its advantages.

SANITARY DIVISION

The Sanitary Division is responsible for the following: The protection of all domestic water supplies; the care of closets and disposal of feces; the collection and disposal of trash and garbage; the cleaning and draining of streets and alleys, including weed and grass cutting; the supervision of all house premises; the elimination of mosquitoes; the inspection of stables and the prompt disposal of stable manure for fly prevention; the isolation and quarantine of cases of contagious and infectious disease; the supervision of milk supplies, and the inspection of commissaries to insure proper protection and purity of all food supplies.

The various villages and works of the company are divided into seven sanitary districts, each under the charge of a sanitary inspector, with a sufficient labor force under his immediate direction to carry on the work. Sanitary inspectors report direct to the chief sanitary inspector, but keep in close touch with district physicians at all points, the physicians acting as local health officers and directing the handling of contagion of any sort.

The sanitation of these districts involves too many items to take up in a paper of this character; but,

generally speaking, our villages are in most excellent physical condition; our water supplies are of unquestioned purity; the protection and disposal of feces is scientifically handled; malaria has been reduced from an occurrence of nearly 6,000 cases yearly to an average of less than 400 cases per year. Fly breeding is fairly well controlled, and the sanitary condition of our stores, schools, etc., will bear closest inspection.

At the hospital a general laboratory is maintained, to which all chemical, bacteriologic and pathologic work is referred by the district physicians for assistance in diagnosis and treatment. This laboratory also handles work for the Sanitary Division, such as the weekly examination of all general water supplies, the frequent examination of isolated water supplies and the examination of milk and other food supplies.

DENTAL DIVISION

Nine well equipped dental dispensaries are maintained, with a force of twelve dentists employed on salary on a full-time basis. Employees and their dependent families are treated at these dental dispensaries on a fixed schedule of prices, approximately 50 per cent. of standard charges. In addition to this, all children of school age attending the schools maintained by the company are carefully examined each year, and are treated at all times without charge.

This dental work is exceedingly popular and is patronized to its limit. It is practically self-supporting, and there is no question as to the enormous value of work done, as thousands of people come to these dispensaries who would never go to capable dental surgeons in the surrounding towns and cities.

CONCLUSION

The question is frequently asked as to whether work of this character justifies a corporation for the heavy expense involved, and, as a matter of fact, it is sometimes difficult to prove this in cold figures. There

is no possible doubt, however, that the careful conservation of the health of any large body of men immensely increases their efficiency, and beyond question, the extension of such work to the wives and children is just as important if the worker is to be able-bodied, regular in his work and satisfied.

In some parts of the country there has been opposition by medical men to systems of this kind, but I take this opportunity to say that our work has had the moral support of all our leading physicians, as well as the hearty cooperation and help of the state board of health and of the state health officer.

ABSTRACT OF DISCUSSION

Dr. S. W. Welch, Montgomery, Ala.: As the chief executive of the board of health of the state of Alabama, it gives me great pleasure to say the demonstration in public health made by the Tennessee Coal, Iron & Railroad Company in Alabama is the best that I have ever seen anywhere. Last year they built a city in a malarial district near Mobile. I inspected that village about the time it was being completed, and the inhabitants were moving in. One of the most hopeful signs of the times, as it appealed to me, was the fact that the railroad divided the place into two districts, one for whites and one for blacks. The superintendent was a native Mississippian, and the doctor in charge was a native Virginian. I think we have gone a long way forward when the negroes of the South are getting identically the same treatment as the white folks. That has and does obtain in the administration of the sanitary departments and the living conditions of the Tennessee Coal, Iron & Railroad Company. In this village malaria was a negligible quantity, and, as Dr. Nolan stated, there was only one case of typhoid fever there. Before ever a house was built a sanitary appointment was built, and as each house went up its sanitary appointments went with it. They were at first temporary appointments, the can system, but as soon as it was practicable this system was replaced by a complete sewerage system for both districts. The work of the Tennessee Coal, Iron & Railroad Company has been the greatest help which the state board of health of Alabama has had. They have shown our people what can be done in the way of taking care of them in centers of organization and trade. Ours is largely a rural problem in Alabama. We have small villages scattered about in large stretches of country, and the demonstrations which have been made of the practicability of keeping these congested centers

perfectly well, as made by the Tennessee Coal, Iron & Railroad Company, has been one of the greatest aids which the state board of health of Alabama has had in its work.

Dr. Walter C. Jones, Birmingham, Ala.: The work Dr. Noland has described probably is unsurpassed in the commercial world by anything of a sociologic sanitary nature. I saw the village of Westfield in the building. I compared it with three other colored districts outside the jurisdiction of the company. In one of these the contents of the toilets flows out on top of the ground, other sanitary conditions are equally vile and typhoid is present the year around. The other two colored sections are practically as bad. The value of all of this work is threefold. First, the employee profits by it. Secondly, if the employer is to have labor that is efficient, his men must be healthy and they must live in reasonably agreeable surroundings. Thirdly, negro homes must be sanitary and negroes must be reasonably healthy in order to prevent the dissemination of disease in our families and in other similar places where negroes do so much of our work. We must protect the health and the lives of our families and ourselves by rendering the negro free from communicable disease and by making him more competent.

Dr. Oscar Dowling, New Orleans: At a meeting of the Southern Development Organization in Birmingham at which Dr. Welch was present, the statement was made that the company could not bring desirable immigrants into the South until they could "tell them the truth, and they could not tell the truth until the South cleaned up." Dr. Carter, assistant surgeon-general of the United States Public Health Service, some time ago wrote me in connection with the antimalaria campaign that this organization could not devote its energies to any better purpose than the extermination of the anopheles, getting rid of yellow fever, and the proper disposal of human excreta, in this way exterminating, or going a long way toward the extermination of typhoid fever, diarrhea and other diseases carried by flies. Later, when I was studying the agricultural colleges at the request of the governor-elect of Louisiana, the president of the university at Knoxville stated that "ignorance is expensive and knowledge is cheap." Our visit and study of places and conditions, strengthened our conclusion that we must provide better quarters for the people of this country, especially for the working people. If people work in your home and in my home, and they live in unsanitary quarters, under unsanitary conditions, they are likely to be a menace to the health of the family. Within the last few years I have discussed many times with managers of large plantations in Louisiana the living conditions of the negroes. The houses in general are poor, there is no provision for heating, and the sanitary conditions around the houses should not be tolerated. But in some places con-

ditions have changed. The negro is beginning to take better care of himself. He wants better houses and better living conditions, fly-proof, sanitary toilets, and bathing facilities. It might interest you to know that there was a suit brought in Louisiana a short time ago for divorce by a colored man and the reason he gave for bringing the suit was that his wife would not bathe. He kept himself clean and her lack of cleanliness was more than he could stand. I felt that that was a very hopeful sign.

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